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ABSTRACT

Three categories of issues relating to government policies and computerized data processing are examined. These relate to: 1) central government policies for data development; 2) parliamentary and public concern with the social consequences of computerized data processing; and 3) the international dimensions of developments in data processing. Part I of the report offers the following conclusions of the Data Bank Panel of the Organization for Economic Cooperation and Development (OECD): 1) central governments must provide overall leadership in policy formation and planning; 2) formal programs should be undertaken to appraise the public of the characteristics, uses and benefits of computers; 3) international coordination of communication standards is necessary; and 4) individual governments should work with the OECD to bring about the required international cooperation. Part II of the report consists of a background paper dealing with data base policy issues, the establishment of computer utilization policies by governments, the analysis of patterns of data base policy development, and the formation of international computer linkage systems. (PB)

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT PARIS 1973

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PREFACE

The Computer Utilisation Group, set up in 1968 by the OECD Committee for Science Policy in response to recommendations of the third Ministerial Meeting on Science, has on its programme studies in the fields of computerised data banks, interaction of computers and telecommunications, computer manpower education, computer utilisation surveys, efficiency audits for computer systems and the potential of information technology in urban and regional planning.

One of the programme items of this group during 1971 was the investigation of central government computer policies.

The present report focuses on the issues in central government policies for data base development, on parliamentary and public concern with their social consequences, and the international dimensions of these developments. It consists of two parts:

I. The statement of conclusions adopted by the Data Bank Panel.
II. The background report prepared by Russell Pipe, Consultant to OECD.

The views expressed in the consultant's report are those of the consultant alone and do not necessarily reflect those of the Panel members, their governments or the OECD Secretariat. The Panel conclusions on the other hand were developed by the Panel members whose names appear on the attached list and consequently do represent their collective opinion. However, they have not been co-ordinated formally with member governments and consequently should not be construed as constituting the official policies or opinions of those governments.

Part One

1. STATEMENT OF CONCLUSIONS BY THE DATA BANK PANEL

2. LIST OF PANEL MEMBERS

I. STATEMENT OF CONCLUSIONS

The conclusions presented here stem almost entirely from analysis of factual reports on the present "state-of-the-art" in many OECD countries. The level of empathy among Central Government policy-makers leaves little division of views on goals for computer utilisation policies, differences arising only in the means by which the goals should be attained. Greater efforts should be expended along several lines to bring to fruition the objectives sought by most Governments.

A. Public policy formulation for computers implies, above all, provision for proper institutional structure, planning capabilities and scope of direction or guidance among ADP users. If anything, fragmentation of important features affecting ADP development has been the chief deterrent to developing coherent plans in most countries. New co-ordinating authorities usually take the form of expanded jurisdiction to an existing Ministry or Department. The add-on nature of this development is not necessarily a disadvantage, if the needed tools to execute this authority are in their possession. There are several recommendations regarding the structural/functional basis for computer policies which can be advanced.

While the structure of Central Government direction or guidance of ADP policy within government may have two or three functional parts, a single Department should have overall responsibility for coordination and house most central planning staff. Official recognition of a central office for computer policy development is important for the establishment of a stable framework within administration.

There is a question of whether or not one of the important goals of automation of personal data files is to allow large scale integration. This important question must be resolved by the widely affected interests of Central and other levels of Government, the Parliament and the public, as rapid and complete adoption of standardisation codes, particularly the personal identification number, may have somewhat different implications depending on decisions for integration of large data bases. Public uncertainties regarding data confidentiality and security should be resolved as quickly as can be achieved in each country. Special attention should be given to the question of the individual's access to public and private files containing personal information on him.

A certain degree of central financial control over software and hardware expenditures would greatly assist the development of central government policies. Pre- and post-installation evaluations are necessary to ensure economy in operation, compatibility with other ADP user operations and to plan time schedules for integration of systems.

The planning function, employing the techniques of three-year, five-year or perhaps longer projections is important. The short-range, specific requirements plan can be merged with budgetary considerations to facilitate stable, prudent ADP expansion. Planning should focus on both ADP needs and uses and objectives of data handling to be reached in the future.

Efforts to elicit co-operation and participation by States, provinces or regions, and local or municipal authorities must be made. Moreover, efforts need to be made to harmonize ADP development within the particular constitutional structures of different countries. This would help to ensure better co-ordination of Government and private efforts in this field.

B. Central governments are faced with the problem of engendering public alienation over the personal and societal implications of the computer. The qualitative, value-oriented nature of public attitudes makes it especially important for governments to translate their practices and objectives into media for public discussion.

Formal programmes should be considered to apprise the public of the characteristics of computers, their use by Government, immediate and future benefits.

The use of data from private data bases, such as credit reference, medical, insurance and business personnel records, ought to be subjected to special regulations.

C. As the volume and complexity of international data transmission networks increase governments will have to take steps to accelerate the harmonization of communication standards.

There is a need for research into international data systems so that appropriate directives can be published and complied with. Some of this research should be internationally sponsored.

D. The OECD has an evident role in helping policy-makers develop computer policies in view of the expertise developed over the recent years in studying this field.

The country representation in OECD and its mission recommend the organisation for continued and intensified leadership in providing a forum for harmonization of policies and practices. This should be explored with appropriate Committees of the Organisation and relevant officials of Member countries.

Deeper investigation of selected activities in certain countries could be beneficial to other countries either planning for new ADP systems, or not yet reaching such a level of ADP usage, or wishing only to compare and contrast methods and approaches.

II. LIST OF MEMBERS OF THE DATA BANK PANEL WHO ATTENDED THE MEETING OF 17th AND 18th MAY, 1972

Chairman	Mr. P. Svenonius	Statskontoret, Stockholm (Sweden)
Belgium	Mr. G. Paris	Services du Premier ministre, Fonction publique, Bruxelles
	Mr. F. Poleunis	Services du Premier ministre, Politique scientifique, Bruxelles
Denmark	Mr. M. D. Rømer	Department of Administration, Copenhagen
France	Mr. O. Rateau	Délégation à l'Informatique, Paris
	Mr. P. Leclercq	Ministère de la Justice, Paris
Germany	Mr. Haneke	Gesellschaft für Mathematik und Datenverarbeitung, Bonn
	Mr. G. A. Kurtz	Bundesinnenministerium, Bonn
	Mr. H. Wille	Bundesministerium für Wirtschaft und Finanzen, Bonn
Ireland	Mr. S. P. Bedford	Office of the Revenue Commissioners, Dublin
	Mr. M. Cullinane	Department of Finance, Dublin
Luxembourg	Mr. G. Biwer	Ministère de la Fonction publique, Luxembourg
Netherlands	Mr. D. Ravestyn	Ministry of Internal Affairs, The Hague
Norway	Mr. K. Selmer	University of Oslo, Oslo

United Kingdom	Mr. H. A. J. Marshall	Central Computer Agency, Civil Service Department, London
Yugoslavia	Mr. S. Han	University of Subotiča, Subotiča
Secretariat	Mr. H. P. Gassmann Mr. R. Pipe	

Part Two

TOWARDS CENTRAL GOVERNMENT COMPUTER POLICIES

- Data base developments and international dimensions -

by

Russell Pipe

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SUMMARY OF MAIN FINDINGS

The purpose of this report is to present and analyse the important characteristics of central government computer utilisation policy in fourteen OECD Member countries. There is wide agreement on the desirability of installing computers for record keeping and more sophisticated tasks in public administration. Thus the issues before central governments are changing from a commitment to install automated data processing to the best practices governing its use. A number of findings relevant to ADP in government policy dimensions are developed from this research.

a) The growth of computer utilisation has resulted in active pursuit in government circles of policies and of the programmes and planning to accompany them. Considerable consensus exists as to the scope and objectives of central direction or co-ordination for ADP in public administration. Only in the means of reaching these objectives bearing on the particular level of development and government structure, do countries exhibit varying methods.

b) The interdependence of computer application policy to management and administration, societal privacy concerns, telecommunications, security and vertical relationships among levels of government is widely recognised among government policy-makers. In many countries positive action is under way for developing the necessary institutions and formalising their basis of operation and on-going authority. Parliaments show awareness of the implications of computers for government and society, and increasing numbers of parliamentarians are seeking legislation to regulate public and private data base operations.

c) The organisational structure for consolidated computer direction in central government is most frequently placed in the Ministries of Interior or Science ; the United States and Canada have a different structure but the responsibility operates from a similar setting. The politico-administrative structure found most effective for central direction contains the following :

i) Proximity to the Chief Executive ;
ii) Independent of functional Ministry ;

iii) Relatively good access to Parliament and the Cabinet ;
iv) Close liaison with the disburser of public monies ;
v) Participation in preparation of Government budget ;
vi) Framework for interministerial and intergovernmental contacts and communication ;
vii) Channels of communication with private computer users.

d) In Finland the "unitary" approach for organisation and servicing record-keeping needs has several commendatory features :

i) The Finnish State Computer Centre, established by statute, is charged with carrying out nearly all ADP tasks for central government. It is responsible to a single Minister ;
ii) There is a wide range of users from the central government, local government and some parts of the private sector ;
iii) A billing system for client **users** resulted in a profit during 1970, the latest year for which records were available.

e) Central planning is second only to procurement-applications control. The five-year rolling plan in France and short to medium range projections in the United Kingdom were found to incorporate features of important general application.

f) The function of the numerous committees involved in co-ordination and co-operation in computer utilisation in central government is changing. During the 1950's and 1960's committees brought a cross pollinisation of techniques among departments and agencies. At the beginning of the 1970's in many countries the committees which formerly provided inputs to a central agency are becoming vehicles for outputs, directives and plans for concerted action for all computer users.

g) During the 1970's many technical problems of integration and networking are expected to be solved. Remaking governmental organisation structure to serve new functional arrangements by rationalising public administration to fit new requirements is being accomplished only in part. The Japanese Government seems to give this issue high visibility and is taking steps through a new Administrative Information System to meet the evolving problems[1].

h) Public-private interface for technical co-operation and data exchange is not being generally included in drafts for consolidated computer programmes. While the need for compatible standards for potential data interchange is recognised, assignment of a priority to developing forward liaison with major private data users is given little attention, except in France and Japan.

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1) See Annex II : "National Information System in Japan".

i) Data security is a term usually applied to defence and law enforcement information and certain other types of highly sensitive, privileged-access data. The installation of "security" techniques in a data base containing health, economic, welfare census, housing, political or other categories of data which include personal identifiers is not being actively considered by any country, so far as could be determined. Rather, rules for prudent administrative management of information collected by central governments on their citizens, is considered sufficient protection of data integrity. There seems to be a need to examine higher levels of data confidentiality for traditionally routine files.

j) The notion that every citizen has a right to a computer printout of all (non-security) records held by central government agencies was found to require further investigation to determine its feasibility. If a right to citizen access to government records is deemed valid,as is at present under study by several governments, a plan for facilitating inspection of such records rather than issuing computer printouts is seen to have considerable merit.

k) The formerly disparate technologies, computers and communications, are receiving attention in a number of countries. The trend toward integrated systems requires a joint focus, on computer and telecommunications, to be successful. Infrastructure separation of the telegraph/telephone services from ministries processing information may be the severest potential impediment to maximum performance capabilities.

l) The need for international or supranational regulations of computer data communications linkages is seen as having growing importance to several central governments. The number of terminals linking multi-national data bases is limited at the present time but public and commercial development of such networks indicates rapid future growth.

m) Patterns were found to exist among the characteristics of computer policies studied. This made it possible to place each within one of three categories. A unitary approach was found to exist when the computer operations of a country and control of computer development in public administration are centralised into a single, or dual functioning government department. The central government direction occurs if one or a limited number of highly placed units of the central government is empowered to supervise or guide computer applications. Partial co-ordination exists if several aspects of computer procurement, planning, standards etc. are not under the authority of co-ordinating agencies within central government. Finland, France and the United States, respectively, are good representations of each category.

n) Regulation of private and commercial computer data bases is believed to be necessary by officials in several countries. However, legislation to regulate the conduct and management of private computer data usage has been limited principally to credit reference bureaux in the United States, Canada and the United Kingdom. In Europe, studies are underway to see if blanket regulations should be established to include insurance, medical, employment, personnel and other data bases containing large numbers of individual dossiers.

Chapter I

INTRODUCTION

The need to justify computers in central governments is past. Automated data processing (ADP) practices are well recognised and widely adopted in nearly all OECD Member countries. The current challenge to public administration is building structured operational programmes, indeed coherent policies for computer applications.

One reason for slow development of central direction over computers is that most departments of central governments have acted independently in acquiring and operating ADP systems. Another is that the almost boundless future for automation has influenced public administrators to contemplate new advances rather than present-day objectives. Nevertheless, an important state of general agreement has been reached by many countries :

- universal support for computers as a tool for many government tasks and a growing realisation that comptability and integration of data bases can lead to greater use of information for wide-ranging policy decisions ;
- recognition that acquisition of new systems and wider applications cannot continue without greater co-ordination, indeed direction in some areas, from a financial/management arm of the central government ;
- realisation that logical, efficient realignment of institutional structure should be considered in horizontal coherence of ADP operations, and realisation of the growing need for lower governmental units to study vertical patterns of functions ;
- recognition of the fact that computers are communicators, and the data they retain is increasingly transmitted to far-flung domestic points and through easily constructed international linkages.

The future opportunities for computers, when realised, may affect every citizen individually and the entire fabric of society. Public policy, therefore, ought to be framed within societal goals and ethical and institutional traditions respected. Computer development in the private, commercial sector has often exceeded that in public administration. Where vast automated personal record registers are the main service function of an organisation, be it credit or employment, the public has been early to call for strict standards imposed by government.

Coping with spiralling growth in computer utilization, necessity for coherence in a government-wide approach, recognising international dimensions as well as ordering private data bases are the formidable challenges to central governments.

This study will investigate the state of progress so far and attempt to find out where policy makers approaching these problems may find useful guideposts.

Chapter II

DATA BASE POLICY ISSUES

The recognition by central governments that policy research is a priority assignment has been translated into a host of tasks often involving ministries, parliament, the judiciary, and private citizen groups. The issues for research and resolution seem to be apparent in all countries, whether they are at an advanced level of ADP application or only the introductory stages. They may be categorized as :

- technical	hardware, software, communications, integration and compatibility challenges ;
- managerial/ administrative	organisational restructuring, new procedures, manpower training, computer systems performance evaluation, for inter alia ;
- social	implications of democratic participation in government decisions, social structure, integrity of sensitive personal information ;
- vertical integration	linkages and co-ordination beyond central government, extending vertically to units of local government and networks involving private business, universities ;
- international linkages	extension of data flow to comply with international organisation needs and multi-national corporations.

For many countries the need for decisions has become clear and action toward policy development is underway. The stage of actual computer development among OECD Members varies widely, however. While each country has set its own pattern and pace, there is considerable interest in co-operation and general agreement that the problems should be favourably resolved. Less advanced ADP users already anticipate the issues currently being tackled by such countries as the United States, Japan, Canada, United Kingdom and the Netherlands. A pre-assessment of technological impacts is considered prudent by those only now reaching a stage of complexity and controversy over ADP. In the field of computer technology perceptions of policy needs and common characteristics exist in most OECD countries.

2.1 OBJECTIVES

This report, as a social science, rather than technical, treatise will have three main objectives :

a) To present country summaries describing approaches to computer technology issues made by several OECD Member governments ;
b) to analyse the characteristics of country policy development and compile an inventory of elements considered necessary to a fully developed central government computer policy ;
c) to review the growing number of data networks crossing national boundaries and discuss questions of regulations and standards for the vast multi-nationally connected data bases of the near future.

The motivation for OECD research into central government computer policy developments is a basic application of the Organisation's charter. This is to help Member countries to develop a more effective approach to wide-ranging issues in modern industrial life and enhance their interest and ability to co-operate in such areas as science and technology. The absence of adequate government policies in several economic, environmental or social fields should not be surprising. The active commitment to formulate government policy, however, opens up a genuine field for OECD help and assistance.

Goals for a national science policy on scientific and technical information are recognised by most OECD Member countries as an element of Science Policy. These goals have been stated as effective utilisation of accumulated knowledge (scientific, technological, and economic and social), promotion of efficient national scientific and technical development, and provision of adequate information for management decisions in and out of government. The development of computer application policies is complementary to efforts, sometimes working in tandem, towards what has been called a "total information policy". Science Ministers of OECD countries agreed at their 4th meeting in 1971 that :

> "The complexity of policy decisions also calls for more and better information at all levels. The increasing interaction of computer, communications and information systems will open up new possibilities in the 1970's. Ministers invited the Organisation to strengthen its work in this fields, and in particular to examine the international implications of the new system[1]."

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[1] Communiqué, Meeting of Ministers of Science of OECD Countries, OECD Press Release, 14th October, 1971, Paris.

As multi-national computer networks begin to mushroom in planning stages or become operational within countries, this task becomes urgent. To frame a coherent course of direction at the political level, contributed to by those in managerial roles on the operational level, is an immense task. That task may be made easier if courses of action now underway by governments are understood by other governments and the elements of such a policy design ordered clearly.

This document touches on far more issues connected with computer utilisation policy development than can be explored in depth. The reader will find a number of interrelated facets in documents of current import published under OECD auspices and especially in the series "OECD Informatics Studies".

It is an objective of this report to validate, if there are still doubts in some quarters, the relevance of the interdependence between computer application policy and management and administration, societal privacy concerns and the linkage of computers to telecommunications. There is also a need to measure computer performance, and the vertical relationships of central government data bases with local and regional governments. The full recognition that a computer policy encompasses many wide-ranging features is most important. The bringin together of the fragmented activities is in itself of value.

2. 2 MAN-MACHINE INTERFACE

In many countries it does not seem to be considered necessary to measure public attitudes towards computer usage, or to measure them frequently. Since the subject is discussed in central government by those who deal with ADP co-ordination, it would probably be helpful to have an idea of those attitudes. This is true even though the public in Europe has less contact with computers than that in the United States and Canada. Attitudes are no doubt being formed by many millions of persons regardless of whether they have acquaintance with computers or not. One recent, scientific sampling of the United States population was conducted by the American Federation of Information Processing Societies (AFIPS) and Time Magazine[1].

The fact that 48 per cent of the persons interviewed had once had a job requiring direct or indirect contact with a computer should reflect a fairly high level of basic public understanding about this technology. Other results indicated that 34 per cent have had problems caused by computers, especially with billing. A wide majority felt that computers will provide information and services for the home (89 per cent) and help raise the standard of living (65 per cent).

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[1] A National Survey of the Public's Attitudes Towards Computers, 1971, available from American Federation of Information Processing Societies, Inc., 210 Summit Ave., Montvale, N. J.

Table 1

BELIEFS ABOUT COMPUTERS

Percentages

	Agree	No Answer	Disagree
The development of large computerised information files will help make our government more effective	63.	8.	29.
Safeguards are used by government to make sure that personal information stored in computers is accurate	53.	19.	28.
Because of computerised information files, too many people have information about other people	58.	9.	33.
Computerised information files may be used to destroy individual freedom	53.	7.	40.
There is no way to find out if information about you that is stored in a computer is accurate	42.	14.	44.

Source : A National Survey of the Public's Attitudes Towards Computers, published by American Federation of Information Processing Societies, Inc., 210 Summit Ave., Montvale, N. J., 1971.

In general, the public thought government should make more use of computers to increase its efficiency, as the computer was believed to serve information storage, calculations, accounting tasks, controlling operations equipment and (39 per cent) "thinking" purposes. There is considerable knowledge of how governments use computers : computing information files on citizens, 91 per cent ; air traffic control, 89 per cent ; vote counting, 88 per cent ; criminal investigation, 78 per cent.

The American people, this sampling suggests, believe that what is usually considered sensitive information should be kept in central computer information files. Over 74 per cent believe that police, medical, school, tax, credit and employment records should be housed accordingly. Further, only 50 per cent approve of maintaining political activity files in central computers. This liberal attitude on data storage is coupled with strong feeling (84 per cent) that government should be very concerned about regulating the use of computers. However, only 61 per cent of those questioned think the government is concerned ; about 30 per cent say it is either very, or fairly, concerned with user regulations.

The study revealed that 91 per cent of the sampling see computers as affecting all of us and considering space and other achievements, credit computers with doing things that would be impossible without them (87 per cent). Interestingly, human rather than machine error is seen to be the source of "computer" mistakes (81 per cent). Fifty five per cent of the respondents believe people are becoming too dependent on computers. A slightly smaller group (54 per cent) believe that "computers are dehumanizing people and turning them into numbers".

Computer public relations is a consideration of importance to some central government officials. Suggestions on implementing the objective of a good image for computers will be presented in this study. The challenge to those seeking to use the computer as a tool for multifarious assignments is that human identity has to be amalgamated with technological developments. Today's computer usage is elementary, according to scientists delveing into future applications. Public understanding of present ADP work will be an important contribution by central governments to their citizens.

2. 3 TECHNOLOGY IMPLICATIONS

Technological forecasting has placed the most advanced societies a few steps or stages away from the cybernetic state of the year 2000. Projections for computer development before 1985, however, do include the following, in descending order of realisation :

a) Flexible internal storage ;
b) Majority of software built into hardware ;
c) Briefcase computers with large memory ;
d) Oral imput to the computer ;
e) Laser memory and transmission of data by laser signals ;
f) One million byte memory small enough for use as an independent desk computer ;
g) Computers learning from their experience[1].

The application of these new developments to Government service will be of particular interest to public administration. Some projections have also been prepared through 1995 as to anticipated computer applications, again in descending order of realisation :

a) Direction of large urban traffic flows by computer ;
b) Control of patients in major hospitals by computer ;

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[1] Parkins and Williams, Science Journal, October 1967, p. 52.

c) Widespread computer-aided instruction in schools ;
d) Computer controlled aircraft, including landings and takeoffs ;
e) Recording of scientific and other advances so that constantly updated status is maintained in central files ;
f) Majority of doctors have terminal for consultation and use computer as diagnostician ;
g) Recording of all income by majority of employers on terminals and automatic transfer of this information to various tax authorities ;
h) Instruction at home through computers ;
i) Computers as common as telephone and television in private homes[1].

Recitation of these possibilities for computer use conjures up two visions : this is leading either to a period of unparalleled freedom, with man possessing the autonomy and leisure he has sought for ages, or man is to become enslaved by the State, surrendering to powerful and uncontrollable institutions the freedoms that mark his selfhood[2]. The Political State is moving towards the Administrative State[3]. Once regulatory systems have become implanted, author Allen Schick believes that the Bureaucratic State will follow (from regulation of the market-place to replacing it).

> "In the post-industrial cybernetic state, government functions as a servomechanism, concerting the policy and the economy to achieve public objectives. As a result, government changes from a doer of public activities into a distributer of public benefits, and the kinds of programmes it operates reflect this change"[4].

When computer development-applications are forecast in the context of certain unpleasant, sometimes Orwellian prospects, there are normally expressions of alarm from the public. "Expectations of computer accomplishments should not be isolated as merely non-normative suppositions"[5]. There must also be a concurrent willingness

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1) Ibid.

2) "The Cybernetic State", by Allen Schick, Transaction, February 1970, also reprinted in Congressional Record, 26th February, 1970, p. E-1393.

3) Ibid, The Administrative State will result from creation of regulatory instruments and agencies prompted by the new growth and mobilisation of administrative expertise to manage public activities. The Administrative State has as its basic purpose the regulation of concentration of wealth and power.

4) Op. cit. , "The Cybernetic State".

5) "Computer Technologists Versus the Humanists : Can the Twain Meet ?", by G. Russell Pipe, Congressional Record, 23rd September, 1970, p. K-9150.

to accord proper priority to human values "mindful of the fact that human organisations and institutions exist to facilitate the satisfaction of individual needs and goals, both spiritual and material[1]". Those concerned with societal impacts ask especially that central government planners recognise fully "that technology is not morally neutral"[2].

A study of central government policy-making for computer utilisation should recognise both contemporary and somewhat futuristic expectations. Otherwise the computer (and government intentions) may not be viewed as agents for bringing society into a new phase but favouring technological elites with insufficient fidelity to the democratic process[3]. The first noticeable political change brought about by the use computers bring is in the decision-making process. In principle, citizens feel that they ought to be able to look over the shoulder of planners and decision-makers ; the computer should not sever this relationship. When computers become available to a large extent to Parliament, citizen groups etc. the computer should enhance this relationship.

A widely differing set of factors can be taken into consideration due to societal development per se in some countries.

> "Many aspects of developed societies are approaching a condition that may be described as the precursors of saturation, in the sense that things cannot go on growing much longer in some lines without reaching fairly fundamental limits. Indicators of saturation are present in total population, pollution, the environment, etc., and in information overload impinging on the individual"[4].

These considerations are stated here to show the range of demands computer policy will make on public officials.

2.4 DEFINITIONS

The terms employed here describing elements of computer science and technology are to be interpreted in the context of

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1) "Computers in Human Society : For Good or Ill ?", articles by Robert M. Fano, Project MAC, Massachusetts Institute of Technology, Cambridge, Mass., pub. in Technology Review, March 1970.

2) "Technology and Society" A Conflict of Interest, by Cornelius E. Gallagher, Congressional Record, April 1969.

3) Information Technology in a Democracy, Alan Westin ed., Harvard University Press, Cambridge, Mass., 1971, p. 2.

4) Science, Growth and Society - A New Perspective, by Ad Hoc Group on New Concepts of Science Policy, OECD, Paris, 1971.

generally accepted usage[1]. Their use is not intended to carry precise meaning in the vernacular of computer experts but rather as functional words depicting the electronic devices and processes which have so changed the informatics segment of government activity and are bearing more strongly on decision-making, management and administration at all levels. There are, however, three types of references which will be frequently made ; they deserve attention lest they be misinterpreted.

The term "*data base*" is exclusively used here rather than the frequently found, similarly defined, "*data bank*". It is not possible to go into the technical differences that concern this choice of terminology, rather that "data bank" denotes as the word "bank" may be defined a "place where something is held available." Thus a "data bank" can, and often is seen as a computer driven storehouse of data collected, ordered and available. There is a static tone, a notion of isolation and sterility as the term has become popularised, which runs counter to fact and intent. This is particularly true of most central government computer systems where the emphasis is constantly on retrieval, the capability of data outputs becomes more the practice (not just hope) of the day, the concept of dynamism and vitality in data bases must be better conveyed to the general observer. This is an occasion to start.

Where the terms "*computer system*" or "ADP system" appear, they refer to a machine or a group of automatically intercommunicating machine units capable of entering, receiving, storing classifying, computing and/or recording data. They include at least one central processing unit, one or more storage facilities and various units of input and output equipment (peripherals)[2]. Data may be in digital representation, or for the purpose of these comprehensive applications, as information (data having been given meaning by human interpretation of their representations).

This research has not been concerned particularly with the types of systems now employed as control systems, inquiry systems, archival systems, et cetera, but rather with distinctions which may characterise the two basic structures of data systems Governments most often develop.

Statistical systems - These are ones organised to receive or collect data on individuals or groups in order to study systematic variations in the characteristics of groups. The purpose of the system is to conduct research and policy-planning studies. Identification of data by individuals in the sample population is required in order to associate new data with older holdings and conduct longitudinal studies. Data on persons are not the intended output of statistical systems[1].

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[1] The seeker of an excellent source book for such terms is referred to *IFIP-ICC Vocabulary of Information Processing*, North Holland Publishing Company, Amsterdam, 1966, an a later edition.

[2] *Study of the Acquisition of Peripheral Equipment for Use with ADP Systems*, prepared by Comptroller General of the United States, General Accounting Office, Washington D.C., 24th June, 1969, p. 7.

Intelligence systems - These are systems in which the data are deliberately organised into "person" files or dossiers to furnish reports about specific individuals. They are designed to centralise data on persons from various locations. While they may be used for several purposes, such as research and policy studies, they are primarily administrative (licensing, payroll, personnel management), regulatory (taxation, welfare, zoning), or punitive (police and law enforcement)[2].

These generalised definitions may aid in describing principal uses for some data bases but have their shortcomings in two ways. Clearly an intelligence system can and often is used for statistical retrieval giving it a dual function. On occasion files carrying personal identifiers are given analytical treatment as such, or sampling of universe (of a population group). In this report the primary function assigned to a data base will be considered as its exclusive purpose in operation.

The least precise, or "softest" term connected with this research is the central focus itself - on policies for central government ADP systems. Let us attempt to give two definitions of policy :

a) "A policy is a definite course or method of action selected from among alternatives and in the light of given conditions to guide and determine present and future decisions"[3].
b) "A public policy is the structure of patterns of decision-making involving a government prescription"[4].

These definitions make it clear that policies are the result of consideration by government officials and contain a promulgation of government will and intent to pattern future action within their purviews.

The academician has dissected the term policy and separated three elements of primary importance :

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1) Information Technology in a Democracy, Alan F. Westin, ed., Harvard University Press, Cambridge, Mass., 1971, p. 16.
2) Ibid.
3) Webster's Seventh New Collegiate Dictionary, G & C. Merriam Co., Published, Springfield, Mass., 1967, p. 656.
4) "Policy and Administration", Morton Kroll, Policies, Decisions and Organisations, Editors Lynden-Shipman-Kroll, Appleton Century Crofts, New York, 1969, p. 9.

a) Values (sets of priorities), standards of expectation set by society. Values interact with democratic ideas (ideology), role of government, fulfilment of needs, development of effective control, serving the "public interest" ;
b) Ethical systems, standards of behaviour, a question of what is effective behaviour in a government system, prescribed action for individuals ;
c) Institutions, basic forms of behaviour, institutional characteristics, clientele groups demanding service, protection or to be regulated - response to change, adjusting to reality and their present day environment[1].

These elements of a policy, although abstract, can be applied to computer utilisation policy development insofar as the values of society are very much present in most countries, the adherence to high standards and codes of ethical behaviour are called for, and the multifarious interests affected by computers inside and outside government are clearly present.

In a policy study it is necessary to go beyond the bare essential characteristics and components of the issue involved in order to identify the general features and dynamics of the policy environment. These supplement features with a direct bearing on the policy itself rounding out the deliberate setting. This is using policy in its macrocosmic meaning, embracing the formal and informal legislative, executive and judicial function as well as those exercised by various organisations, publics, groups and individuals. Here the objective is to ascertain the degree or level of development and how this stage of development evolved in particular countries, and the range of elements which the policy involves.

The intent of this research is to help set distinguishing points of elevation in government action, from the level of mere computer application practices to a higher stage of computer programme formulation and finally determination of a computer policy for government and private sectors.

It is a correct assumption that there can be no sharp separation between policy and administration. Policy is the value content of the administrative process[2]. The operational patterns and functions of the administrative process form a large part of the "institutional" element of policy formulation. There is a difference in simple "evolution" of administrative policy and the policy-makers' determination on a specific course of action (usually at the political level). Administrators in most cases are vitally involved in forming

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1) Ibid., p. 10.
2) "Role of the Administrator-Policymaking as Part of the Administrative Process", George A. Shipman, Policies, Decisions and Organisation, Editors Lyden-Shipman-Kroll, Appleton Century Crofts, New York, 1969, pp. 121-135.

computer practices, crystallizing courses of action on which elected officials decide and later in laying down myriad regulations to fulfil policy intentions.

Policy stated or intended by legislative bodies may or may not fulfil the definition of "public policy" in the sense that it is or will be contained in the administrative process[1]. Legislation usually recites a set of formal values which are not necessarily the values conveyed to society by subsequent governmental action. The same is true of judicial mandates whose execution on a day-to-day basis falls to administrative branch personnel.

Policies contain programmes within the administrative process where they are carried out. Programmes may be described thus :

> "Programmes consist of organised special purpose institutions and activities. Programmes are the substance, product, content and the process of delivery, whereas public policy is the value content of administrative decisions. In most fields programmes are built around specialised professional roles, such as school teaching, construction engineers or computer programmers"[2].

Planning is very much an ingredient of policies. It projects programme activity into the future.

> "Policy planning and programme planning can be viewed as parts of the same concern. Policy planning projects impact upon society while programme planning is the more specific nature and interrelationships of programme products for future adjustment. The objective of planning is to anticipate future needs and to project government activity over some period of time in a way that will meet these needs"[3].

ADP planning, especially with rapid technological change, is an essential cornerstone of government policy.

The purpose of detailed examination of the characteristics of policies is not to challenge those governments believing they have such ADP policies by semantically deducting irrelevant or incomplete elements to prove that non-policies exist. The reverse is the case. Various governments which are working on ADP co-ordination and central direction will be examined to see how near these efforts come to fruition as "policies". This should be a constructive exercise for placing an empirical and analytical framework on government computer activities, potentially beneficial to them and useful guides for other officials similarly devoted to these matters.

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1) Ibid., p. 122.

2) Ibid., pp. 123-126.

3) Op. cit., "Role", p. 128.

Chapter III

ESTABLISHING COMPUTER UTILISATION POLICIES BY CENTRAL GOVERNMENTS

3.1 PRACTICES IN SELECTED COUNTRIES

In this chapter fifteen OECD Member countries will be reviewed regarding their approach and stage of development of computer utilisation policies. Practical considerations such as length of this report meant giving more depth to some countries than others, as well as the object of minimal redundancy. Each summary is intended to present factual and timely highlights of central government activity. Rather than simply reproducing each summary in alphabetical order they have been grouped according to three categories of characteristics of the various countries' central government ADP practices.

A unitary approach is manifest when the computer operations of a country and control of computer development in public administration are centralised into a single, or dual functioning government department. Central government direction occurs if one or a limited number of highly placed units of the central government is empowered to supervise or guide computer applications. Partial co-ordination exists if several aspects of computer procurement, planning, standards, etc., are not under the authority of co-ordinating agencies within the central government. Co-ordination suggests organising interaction among ADP users rather than imposing decisions on how their systems should be developed or operated. Countries where there was lack of information, or a statement was received to the effect that no central government co-ordination takes place, were omitted.

3.1.1 The unitary approach

The concept of a unitary approach to ADP policy is perhaps better described by its synonym : undivided. To have such a policy requires centralisation of both computer operations and control of computer development in the public sector generally. Few countries seek such an approach nor would it be practicable in 1972 due to the present computer acquisitions by many public authorities and two or more policy-making groups existing at high levels of government. Reports issued by one and possibly more governments indicate that a goal of solidarity is part of their operational practices.

Centralisation of computer operations requires initially a large, well equipped central government computer centre. It also demands that all, or nearly all, ADP-related tasks in government departments and institutions (universities and municipalities) should be brought to the centre. The absolute objective that no computer systems should exist apart from the computer centre is not realistic. However, while data may be processed or re-processed, outside the centre, all information systems would nevertheless be available to it. The Finnish State Computer Centres (FSCC) aim at multiple production of data register information for a wide user clientele and the integration of data flows toward a "total information system to be handled by one computer system only." Such a centre must necessarily be located inside government rather than operate as a private or semi-private organisation.

Ideally for unity in policy objectives, the computer centre should be under a single ministry authorised to establish overall policy and planning and implementation for the government. The authority to approve or reject ADP equipment acquisitions is an important facet of power for this ministry. All agencies' computers should be required to co-ordinate their methods with the centre and make data available as is necessary and desirable for effective integration of information systems. The hurdle of administrative change and legislative reform ought not to slow down a master plan for ADP.

The Central Government of Finland has empowered the Minister of Finance to decide upon and carry out computer policy. The Finnish State Computer Centre was established by Act of Parliament to service the ADP needs of government and build an integrated data base for use by all public institutions, and to a lesser extent private. This example comes closest to a unitary approach out of all countries studied and exemplifies most of the characteristics ascribed to it.

Datacentralen in Denmark has a reputation for being a model of what the FSCC seems more accurately to reflect, that is, a central ADP service controlling nearly all public administration tasks aiming at the integration of data bases for multi-purpose applications. The Danish approach is included under the unitary heading in part because it seems to fit best here, and there are many readers who will wish to contrast it with the Finnish example.

FINLAND

Finnish State Computer Centre (FSCC)

The Finnish State Computer Centre (FSCC) was created in 1964 to carry out data processing activities in the central government. The FSCC "plans and carries out tasks relating to the automatic data processing requirements of governmental departments and institutions, to ensure effective co-ordination in the use of the existing computers in state administration, to advise and assist in questions relating to automatic data processing, to research and to take initiative in automating the tasks as well as to take part in developing of data processing and training the personnel employed primarily by state administration for ADP"[1]. Data processing services for municipalities and other public communities as well as for private business enterprises are also provided by FSCC. Objectives of the Centre are stated as :

a) "Bringing about such ADP systems and machine language data registers by means of which the information needed for planning and control can be produced for as many customers as possible in state administration or in public or private sectors ;
b) "Integrating the data flows in different ADP systems as well as the relationships between different information registers so that the integrated systems meet as great a need for information as possible ;
c) "Producing general programme sets or so called system packages, by means of which similar tasks of different governmental departments, institutions, and business enterprises can be carried out quickly and economically ;
d) "Adapting the utilisation of computers and among other things their complete library programme to new research and management methods and thus improving the effectiveness of decision-making, planning and controlling of the activities and ;
e) "Developing for its part the use of computers by improving operation systems and the methods of systems work and by arranging ADP training"[2].

Most of the working capacity of the Centre in 1970 was required for the following tasks : computer runs on Population Register, ADP in direct taxation, planning in Driving Licence Register, salary accounting system for various institutions, and various statistical systems. The Centre made a profit of income over expenditure in 1970. There were 350 customers, 1,100 tasks (up from 850), 359 personnel (up from 297), 500 million printed lines (up from 432 million), and 14,110 uses of computer in standard hours (over 12,250). The greatest users were :

Board of Taxation	18,7 per cent
Population Central Registration	13.0 per cent
Administration of Public Roads and Waterways	8.8 per cent

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[1] Finnish State Computer Centre, Modern Data Processing, 26th September, 1969.

[2] Ibid, p. 2.

University of Helsinki	6.2 per cent
Central Statistical Office	6.0 per cent[1].

However, there was considerable local and regional usage that took place in 1970 (see Table 2).

Several central registers have already been automated and integrated by the FSCC. These include population registration, motor vehicles, business firms, registration of teachers, registration sytem of civil servants, pensions information, and registration of former state employees. The following are being planned :

Register of Real Estates
Information Systems for the Administration of Justice
Students Register
Teachers Register
Agricultural Register
Information System of the Labour Administration
Register of Driving Licences[2].

Table 2

LOCAL AND REGIONAL GOVERNMENTS AS CUSTOMERS OF THE FSCC

	Number	% of all customers	% of all revenues
Local governments (communities, communal institutions and federations of communities)	113	21	4
Regional governments (regional administration)	54	10	18
Total	167	31	22

Source : Finnish State Computer Centre, Helsinki, Finland (23rd December, 1971).

According to the FSCC, development of the central registers in the next few years will aim primarily at :

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[1] Finnish State Computer Centre, Report on Activity in 1970, Helsinki, 1971.

[2] Finnish reply to OECD questionnaire.

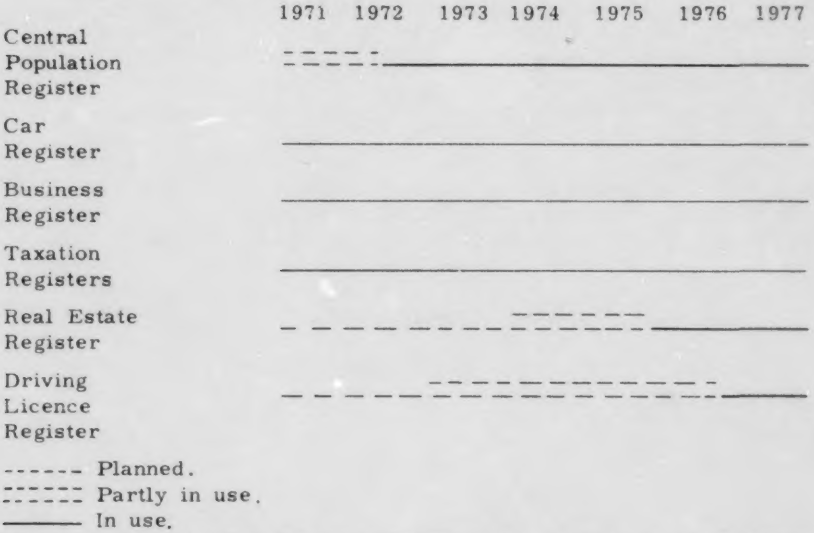
- founding new central registers,
- promoting wider adoption of general codes and creation of new ones,
- the adoption of remote processing[1].

Among these registers given priority is the real estate register from the point of view of an integrated overall system. The time schedule for completing adoption for central register lists in the Central Population Register is 1972, real estate in 1975 and driving licence registration in 1976 (see Table 3).

Integration of the central registers is made possible by standard codes of which the person code and the business code. These codes have already been adopted and have been legally endorsed. They have not been incorporated in all the central registers where this is necessary for integration. The real estate code is the most important for the immediate future. A code adoption schedule is shown in Table 4. The Centre will probably adopt no new codes for the business register in its present form. In time an official trade register will probably be formulated alongside the business register, this will include the business code.

Table 3

SCHEDULE FOR ADOPTION OF CENTRAL REGISTERS



Source : Finnish State Computer Centre, The Development of State Central Registers in Finland, 18th January, 1972, p. 5.

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[1] Finnish State Computer Centre, The Development of State Central Registers in Finland, 18th January, 1972, p. 5.

The third stage in developing registers is to make remote processing possible.

> "At the moment almost all the existent registers are on magnetic tape and some new central registers will also be deposited on this to begin with. However, the idea is for these to be transferred as widely as possible to random access storage equipment. It will then be possible to start remote processing. The following stages will be followed for the various registers :
>
> - remote processing experimentation ;
> - compilation of a remote processing plan based on the experience gained from experiments ;
> - adoption of inquiry systems and commencement of central register updating and ;
> - handling of the entire integrated entity by remote techniques[1]".

Some exploratory experiments in remote processing were carried out in 1971 on the car register. These experiments are to continue and result in final plans for the register. By 1976 most of the central registers will come under remote processing, according to the provisional schedule shown in Table 5.

The final objective of the FSCC is a total system to be handled by one computer system only. It is estimated that random access equipment on the market in the next few years will make this solution economical in a country the size of Finland. One major challenge is the installation and operation of about 1,000 terminals for local register authorities for updating in central registers and receiving data from these registers.

Creation of the Finnish State Computer Centre was a result of Act 196 of 1964[2]. "The FSCC has no decision power in the co-ordination tasks. The decision power is used by the departments and institutions themselves, the ministries in question and finally by the Ministry of Finance." The Computer Centre has also to make proposals and recommendations on the basis of examinations of plans by departments or institutions of government. Co-operation among users of computers in departments and institutions, leading to standardisation of computer applications, should be introduced by the Centre.

The Centre is managed by a director and governing board. Members of the Board and the director are appointed by the Minister of Finance for three-year terms. The Board is to direct and supervise the activities of the Computer Centre, establish rates, work priorities, prepare the budget and decide on contracts and

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1) Op. cit., FSCC, 1972, p. 6.

2) Act (N° 196) on the Establishment of the Finnish State Computer Centre, issued in Helsinki on 30th April, 1964.

Table 4

STANDARD CODE ADOPTION SCHEDULE

	1971	1972	1973	1974	1975	1976	1977
Central Population Register							
- person code	------	———	———	———	———	———	———
- business code	------	------	———	———	———	———	———
- standard real estate code				———	———	———	———
Car Register							
- person code			------	------	———	———	———
- business code			------	------	———	———	———
- standard motor vehicle code	———	———	———	———	———	———	———
Business Register (trade Reg)							
- business code	———	———	———	———	———	———	———
Taxation Registers							
- person code	------	------	———	———	———	———	———
- business code	------	------	———	———	———	———	———
- standard real estate code				———	———	———	———
Driving Licence Register							
- person code		———	———	———	———	———	———
Real Estate Register							
- person code			------	------	———	———	———
- business code			------	------	———	———	———
- standard real estate code			------	------	———	———	———

------ partly in use.
——— in use.

Source : Finnish State Computer Centre, The Development of State Central Registers in Finland, 18th January, 1972, p. 6.

other important matters. The director executes the decisions of the Board and is responsible for overall operation of the Centre. The organisational structure of the Centre in the central government is indicated in Table 6.

Experience during the 10 years of operation of the Centre indicates that the planning and implementation of central registers have been very difficult. This is in part because developing one register usually affects several departments and institutions. Co-ordination and supervision of planning measures have taken longer than anticipated. One reason is the fact that implementation of systems often calls for administrative changes involving time consuming legislative reforms. This was particularly the true of the formation of the Central Population Register.

> "The transfer of basic data to central registers from old manual or computer-language registers is still a big undertaking even when the systems covered by the central registers have already been handled centrally. This is not only because of the large amount of data, but also because the data usually do not meet the demands of the central registers. This calls for the manual adaptation and supplementation of data, manual transfer to computer language, and detailed checking of data."
>
> "The utilisation of the data in central registers already in existence, especially for research and planning, has been quite extensive. Experience shows that as soon as it is possible to supply up-to-date information there will also be a demand for it without special marketing. However, so far the problem has been that it has only been possible to supply data in a rather limited sphere (population, motor vehicles, businesses) and the data in various central registers have been significantly integrated"[1].

The questions of data confidentiality and individual privacy are receiving attention in Finland. The Finnish constitution and other legislation contain provisions for the protection of life, personal liberty, property and postal secrecy. Under the publicity of the Public Documents Law, certificates concerning private persons must not be made known to outsiders or be published without permission of the person in question. Two recent judicial decisions resulted in the sentencing of a provincial accountant for giving confidential information about a person's taxation to a newspaper and ruled that a physician of a hospital has no right, without the permission of the patient to give a certificate of the latter's illness[2].

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1) Op. cit., FSCC, 1972, p. 10.

2) G. B. F. Niblett, Digital Information and the Privacy Problem, Informatics Studies, N° 2, OECD, Paris, 1971.

Table 5

SCHEDULE FOR COMMENCEMENT OF REMOTE PROCESSING

	1971	1972	1973	1974	1975	1976	1977
Central Population Register							
- inquiry system		======	======	======	======	________	________
- updating as remote processing				======	======	________	________
Car Register							
- inquiry system	======	________	________	________	________	________	________
- updating as remote processing			======	________	________	________	________
Business Register (Trade Reg)							
- inquiry system				======	======	________	________
- updating as remote processing				======	======	________	________
Taxation Registers							
- inquiry system				======	======	________	________
- updating as remote processing				======	======	________	________
Real Estate Register							
- inquiry system				======	======	________	________
- updating as remote processing				======	======	________	________
Driving Licence Register							
- inquiry system				======	======	======	________
- updating as remote processing						======	________

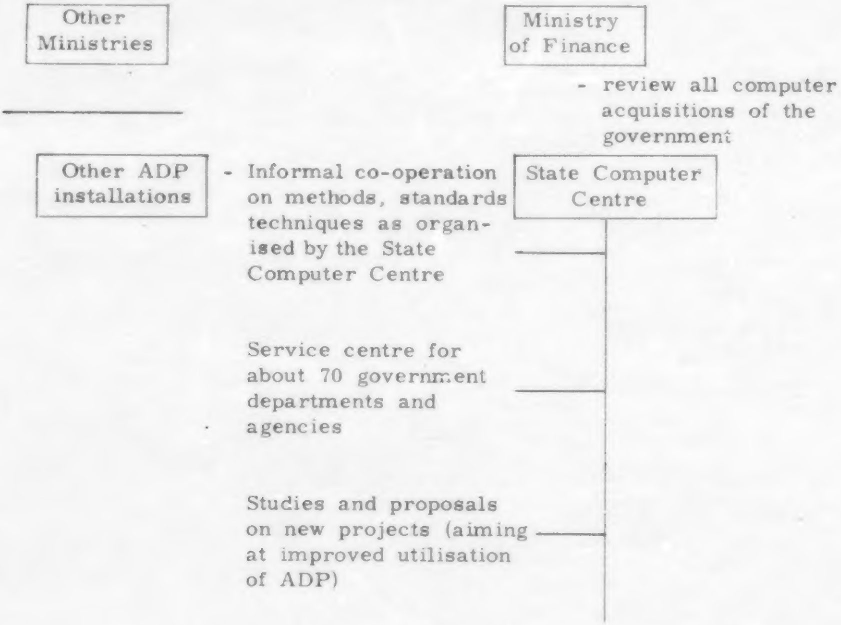
====== experiment.
________ use.

Source : Finnish State Computer Centre, The Development of State Central Registers in Finland, 18th January, 1972, p. 8.

Private information in the possession of the Government is primarily the provisions concerning criminal penalties for unauthorised disclosure of certain information, and rules on compensation for damages. Within the FSCC, the authority in charge of a particular register has authority to decide rules on releasing data from it. The Centre may not, unless under provision of statute, release

Table 6

ORGANISATION OF ADP IN FINNISH GOVERNMENT


Other Ministries
Ministry of Finance
- review all computer acquisitions of the government
Other ADP installations
- Informal co-operation on methods, standards techniques as organised by the State Computer Centre
State Computer Centre
Service centre for about 70 government departments and agencies
Studies and proposals on new projects (aiming at improved utilisation of ADP)

information belonging to a client to another user without the client owning such data giving permission.

Because of the problem of the legal protection of the individual in other countries, the FSCC and the Ministry of Finance made a proposal "to the Ministry of Justice on the setting up of a committee to investigate whether the regulations on the publication of documents and data should be changed or supplemented as far as the legal protection of the individual is concerned because of automatic data processing". A commission has already been set up to prepare the work of the committee"[1].

DENMARK

The Ministry of Finance and the Department of Administration co-ordinate computer procurement and application in the Danish

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1) *Op. cit.*, FSCC, 18th January, 1972, p. 11.

Government[1]. The Datacentralen is a central data processing service for public administration, national and local, but has a limited policy-making role. The Government has attempted to address the main elements of concern in the ADP development and has created committees on privacy and policy research.

The Ministry of Finance supervises the procurement, purchase or lease of information processing equipment. The Ministry consults the Datacentralen before deciding on the merits of requests for new equipment. Consultation with the Board of Datacentralen is designed to assure that technical details are in order and that such new computer capabilities are needed in view of the service capabilities of the Centre.

The Department of Administration, operating under the Ministry of Works, is responsible for co-ordinating ADP applications and assisting in the supervision of Datacentralen. All public agencies apply to the Department before planning automation. The ADP co-ordination staff reviews and evaluates proposed projects, with special attention to ADP applications pertaining to more than one functional area. This unit also provides technical and advisory services to other departments.

There are several working committees serving the Department and contributing to the overall co-ordination programme. The Population Register Council has been the steering committee for the introduction of the central population file and will probably engage in privacy research. Three steering committees work for (a) overall ADP applications in the Danish Government, (b) the Northern Europe Computing Centre located at the Technical University of Denmark, and (c) for ADP applications in the Danish Statistical Department. The Department is also served by the Danish Standard Committee for Automation.

The Department has established several ad hoc working groups and committees :

i) Committee for setting up a master plan for computer installations and development in the Danish University and institutions of higher learning and research ;
ii) Committee to evaluate and review the organisation of ADP co-ordination in the Central Government area ;
iii) Working group to evaluate the future demand for data transmission in the public sector, and
iv) Working group on the establishment of systems analysis education for government employees.

The Department maintains contact with State and local government.

Datacentralen, founded in 1959, has now over 1,000 employees and operates as a private computer service centre for public administration. It is governed by a board with a majority appointed

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1) The Applications of Information Processing in Public Administration, pp. 35-36.

by the Minister of Finance. Regional and local authorities are represented on the board. Datacentralen has departments for planning, programming and operation. It sells its services to public agency users, charging them for computing time, manpower and programming. Public agency files processed by the centre remain the property of the user agencies. Thus Datacentralen has responsibility only for data security measures in the computer center. It has no responsibility for the reliability of these data, their proper use or their maintenance. Recently, when attention focused on the privacy issue, it was noticed that the data processing staff of Datacentralen not being government employees, were not bound by maintenance of confidentiality statutes. The Committee on Privacy is to look into this matter.

The Minister of Justice appointed the Committee on Privacy in 1970 to study issues relating to public and private data banks.

In January 1968 the Department of Administration formed a working group to discuss overall management and control of ADP development in the Danish public sector, including the provision of the necessary resources and personnel. The group recommended in a report in 1969 that general applicational, technical and organisational questions for the central government should be studied on a permanent basis and ADP committees formed for individual sectors to establish long range plans for computer use, deal with organisational problems created by ADP and inform the Department on development of computer utilisation in the sector.

Local government in Denmark has organised its ADP activities around six regional centres which work for 90 per cent of the municipalities. The centres are independent associations organised on a commercial basis, connected by a co-ordinating committee, on which each is represented. Thus exchange of information among centres is ensured and duplication of programmes avoided. This co-ordination committee is spokesman for local governments in discussions with the Department of Administration on distribution of work between the municipalities and the State. The Committee handles administrative organisation of applications affecting the entire country as well as co-operation with national registers and compatibility of equipment.

3.1.2 Central Government Direction

It may be useful to posit a working definition of direction in reference to ADP policies. Central governments direction involves guidance or supervision of computer systems and activities in public administration by a single or limited number of agencies. The most highly developed direction implies actual supervision, the imposition of instruction on most segments of public administration in this field. A lesser stage is guidance of ADP implying decision-making power greater than that of the agencies described in the following section, which may only co-ordinate. France, the Netherlands, and the United Kingdom offer the most descriptive illustrations of central government direction.

Several elements of direction may be identified in this context. The institutional structure is of vital importance. A legislative mandate, as well as inherent confidence by the office of the Chief Executive, is essential. The Délégation à l'informatique in France is a good example of proximity to the seat of power as it operates as a branch of the Office of the Prime Minister. The operational role among ministries and other central government institutions is similarly of first priority as is also the organisation's relationship with lower levels of government. The functions of the agencies directing ADP policy must incorporate working control of procurement, establishment of standards and forward planning.

Apart from its setting in central government, the institution must have a unique combination of attributes. It should possess the technical capabilities for reviewing computer acquisition proposals and be competent to give advice on operational systems. It must be housed in a ministry or special appendage with frequent easy access to all ministries, departments, agencies and other institutions. Normally, memberships on interdepartmental committees will develop this liaison role. Principal liaison with states and municipalities on ADP Programmes is best served if the directing agency operates within the department responsible for local affairs, as in the Netherlands with the Ministry of Home Affairs. Adequate staffing and freedom of action from political pressure at the elected level in either government of parliament are important.

The need to impose standards for computer applications is widely recognised. The example of the United Kingdom, where there are 30 different series of computers and hundreds of different programmes, will illustrate this problem. Whether a government has decided to develop large dat bases, interface intelligence files extensively or have on-line capability among principal data users, compatibility nearly always heads a list of problems to be overcome. Standards and compatibility direction are largely retrospective in terms of government computer equipment holdings if a strong procurement policy exists. New systems and their operations can be made to comply with current technological progress, thus vastly reducing the need to adopt practical standards when they become operational.

The planning function is really the only assured method of harmonising all elements of computer utilisation to accomplish government policy objectives. Most governments, in the same way as France, make decisions concerning requests for new equipment on a year to year basis, while requiring departments to submit three to five year "rolling" plans. Once a coherent planning document is prepared, the daily tasks of new systems application reviews can adopt a government-wide perspective. So many policy elements arise in planning that this function is the keystone of government policy development.

One liability in organising country summaries along approaches to computer policy formulation is the gap in time between preparation and distribution of the relevant materials. Several countries in addition to France, the United Kingdom and the Netherlands are included, namely, Japan, Sweden, Norway, Ireland, Belgium and Austria. Changes are constantly occurring in the different countries, and these may affect their placement in the various categories.

FRANCE

Co-ordinated ADP development in French administration is exercised by the Délégation à l'informatique, which operates out of authority from the Office of the Prime Minister. Established in 1966, it was formed when Plan Calcul was introduced. Plan Calcul is a plan for the development of French information processing and operates through an inter-agency body attached to the Minister of Industry and Scientific Development. The four most important responsibilities of the Délégation are :

a) Common definition of limits of competence between departments ;
b) Integration of specific functions ;
c) Compatability of systems, and
d) Regional approach[1].

There has been a genuine need for a co-ordinating authority for computer utilisation in France. This can be seen from the number of computers in use by the administration as on 1st January, 1971. Of a total of 630 computers, including those used by universities, hospitals, P&T and local authorities, fifty-five per cent were located in or near Paris, and 7,000 people were working in ADP in government service.

The Délégation is staffed by highly skilled experts who monitor the computers of all agencies and offer advice on equipment plans, recruitment and training of personnel, improvement budgeting and accounting systems, standardization of data and programmes and the definition of the ministerial pilot-projects.

An information processing commission has been attached to each of 13 Ministries responsible for largely computerisable services. Each commission exercises authority over the administrative services of the ministry and public organisations under its supervision (not of an industrial or commercial nature). These commissions are usually composed of the directors of the departmental services, experts, representatives of other Departments (sometimes) and a representative of the Délégation (always). They must establish a plan for ADP development on a base of 3-year plans ; on a revolving basis the first of such plans was to be submitted in October 1971.

The commissions operate at the highest ministerial level. Each has a chairman and permanent secretary and a unit of experts responsible for forecasting in the field of automation. The principal duties of the commission are to examine tenders, supervise information processing projects, establish guidelines for the development

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1) International Institute of Administrative Sciences, XI International Congress of Administrative Sciences, Rome, 6th to 11th September, 1971, p. 45.

of information processing and contribute to the application of interdepartmental policy.

The Interagency Committee on Information Processing, under the chairmanship of the Délégation comprises a representative of each ministry, the Secretary-General of the Government, the Director-General of the Administration and Civil Service Affairs, the Director of the Budget, the Director-General of the National Institute of Statistics, the Director-General of Communications, a general rapporteur and four experts.

> "The Committee formulates the technical and economic standards for the definition of information processing system projects, appraises and ensures the technical and economic consistency of projects and departmental plans and their compliance with the Government's policy, proposes general studies of common interest and studies of particular problems, such as the management of specialised classes of personnel, and regroups the agencies' plans and forecasts in an annual report."
>
> "The measures to be taken for carrying out the Committee's decisions are proposed to the Prime Minister or to the Ministers concerned by the Delegate for Information Processing, under the responsibility of the Minister to whom he is attached"[1].
>
> "Funds for specific projects are made available to the Délégation à l'informatique, enabling it to provide the incentive for effective action on the part of Ministries with poor automation facilities and few resources as well as for interministerial projects in the public interest. Examples of the latter are :
>
> - the development of large registers for the identification of persons (SAFARI project), enterprises (SIRENE) and soils (SILOE). SAFARI and SIRENE should be operational by 1973 and SILOE probably by 1976 or 1977 ;
> - development of a project for a network connecting computers of different makes (CYCLADES Network) ;
> - the partial financing of automatic documentation projects, such as the project for computerising legal data conducted by the Centre d'études et de documentation en informatique juridique (CEDIJ) ;
> - the partial-financing of many projects for processing medical data, etc.
>
> "It should be made clear that the main purpose of the funds assigned to the Délégation à l'informatique is for getting Studies or projects in the public interest under way, and that normally they are to be replaced later by funds chargeable to the various Ministries.

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1) Ibid., p. 46.

"The Délégation also plays an important part in training and research.

"1. In the matter of training the Délégation has endeavoured to obtain more complete information on the quantitative and qualitative needs of the French economy for computer personnel, to see that adequate training schemes were set up by the responsible authorities, and finally to ensure that suitable rules were drawn up for computer staff in government service. It has so far succeeded in achieving the following substantial results :

- a report has been prepared on computer personnel requirements up to 1975 (1971) and the CICI (Centre d'information sur les carrières liées à l'informatique) has been set up, whose task is to inform interested persons as to the qualifications and subjects required possible openings, and salary scales offered in the various computer-based professions ;
- the Ministry of Education has introduced a bachelor's and master's degree in computer science in the universities and has set up University Institutes of Technology (IUT) which train programmers in a two-year post-secondary course, while a master's degree in computer science as applied to management (MIAGE) has also recently been added; two decrees were adopted on 29th April 1971 regarding the status of government computer personnel which, although not ideal, definitely upgrade the previous position of such staff.

"2. Where research is concerned, the Délégué à l'informatique supervises and presides over the Board of Directors of the IRIA (Institut de recherche d'informatique et d'automatique) set up under the Act of 3rd January 1967. Its broad mandate is to stimulate computer research in France (particularly by subcontracting work to laboratories throughout the country, to engage in research itself and to assist the Délégué by providing such technical services as evaluation, standardisation and expert advice.

" This is an important role and one directly linked with the Délégué's work of administrative co-ordination since research is an essential factor for promoting an overall computer policy, and in France is regarded as the only rational approach for controlling the computer-utilisation process"[1].

The Délégation elaborates long term plans by various departments into a national scheme, controls implementation of equipment and decides on applications. A Plan d'équipement is

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1) Communication by the Délégation à l'informatique (october 1972).

prepared when the Interdepartmental ADP Commissions have presented long term objectives with a five year range (the three-year plan is a precise forecast of need while the five-year plan is less definite). Until recently the Délégation exercised its co-ordinating role through short-term decisions. However, in the future, decisions will be based to a greater extent on the five-year plan. In 1971 the Délégation became involved in the preparation of the government budget and negotiations with services of the Department of Finance to support only such projects as have been technically approved.

Several examples of the introduction of functional compatible programme co-ordination illustrate one of the objectives of the Government.

Driving Licence System : This associates the Departments of the Interior, Justice and Finance relative to the driving licence system. The Department of the Interior is concerned with issuing driving licences, the Department of Justice with motoring offences and drivers, and the Department of Finance with insurance coverage for drivers and cars. A common file has been created for all users, and the programme substantively divided into administrative and judicial functions.

Civil Servants' Payroll and Information : Under the Department of Finance all civil servants payrolls are disbursed. At the same time the departments have begun to automate administrative records and the Civil Service Department is developing a common procedure for all departments.

Social Security Insurance : Several services are involved here, housed in a number of administrative departments. A plan has been developed to create a new system of automated common files. Test results are now being received.

An interface between public and private sectors has been established to support diffusion of social and economic information at regional level, using equipment for compiling and editing data. Users of this information will have access to the same service, the economic information evaluated and correctly interpreted according to their needs. A later objective of this programme is a national interconnected information network. As developments proceed, a study can be made of needs common to the public and private sectors.

An industrial information register is being developed by the Department of Industry. This should lead to an integrated information system on industries, open to government and private users. This project aims at simplifying information exchange between administration and industry requiring compatible procedures and to find integrated procedures for data transmission. Some fifteen registers are concerned, including customs, international trade statistics, industrial and commercial benefits, and inquiries on the structure of employment.

The outcome of the co-ordination and integration of computer systems has been projected in general terms. "There will be a huge network of data banks, these would not be centralised in any way but instead grouped around a number of nuclei of a regional as well as functional nature... Regional observation posts built around regional economic data banks will serve enterprises, institutions and government departments in given areas ... There will also be functional groups around a number of nuclei"[1]. For instance, tax data would be stored by the revenue service, but at a two-fold level, regional and centralised...Conditions for access must respect operational rules for the departments themselves and new requirements where storing departmental files are in regional centres"[1]

The privacy issue has been raised in the general context of ADP. Because of the implications of the Plan Calcul and short range action initiated by the Délégation, the Prime Minister has consulted the Council of State on data protection and personal rights. The report by the Council of State has been reviewed and the Government intends to send legislation to Parliament in the form of a series of principles for the protection of individual privacy.

UNITED KINGDOM

The growth of computers in the Central Government has been rapid, and attention to the need to develop a policy for computer utilisation has been increasing. In 1971 there were over 200 computers in operation in the Central Government serving a wide range of applications[2]. At 31st March, 1971, approximately 12,000 staff, including military personnel, were employed on computing work in departments. About 6,500 were engaged on data preparation and as support staff, and over 5,000 on management, systems programming, and computer operations.

The forecasts through 1977 suggest a doubling of the computer power available to departments involving a possible investment of about £ 112 million. Staff needs have been increasing by 30 per cent per year, and while this is expected to lessen, it is predicted that 7,500 personnel may be involved in 1976. Adoption of ADP has not come about without participation of several agencies in the design and procurement of computer systems.

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1) "The Policy of the French Délégation à l'informatique in Regard to Government Data Banks", by M. Allègre, OECD Document.

2) Twenty-one central government departments have one or more data processing facilities. Nearly 500 local authorities use computers and data processing centres are operated by most of the nationalised industries.

Central Computer Agency

In the early 1960's Her Majesty's Treasury had responsibility for the pay and management of the Civil Service, as well as for finance. One of its divisions, directly concerned with management efficiency, was the Treasury O & M Division. As computers began to be used in Central Government, Treasury O & M acted as advisor to Government on computing. A technical support unit was established to appraise and test equipment and software. Her Majesty's Stationary Office, which had always been responsible for the procurement of office supplies, including office machinery, extended its activity to the procurement of computers. In the ensuing years the Technical Support Unit was transferred to the then Ministry of Technology, and the pay and management side of HM Treasury was detached to form the Civil Service Department. In 1971, HM Treasury delegated financial control of computer procurement to the Civil Service Department. The latest development, dating from 1st April, 1972, has been the establishment of the Central Computer Agency, as part of the Civil Service Department. This Agency (CCA) has been formed by bringing together in one organisation the staff and central computer function which was hitherto spread between the Civil Service Department (policy, planning and operational support) ; the Department of Trade and Industry (the Technical Support Unit) ; and HM Stationary Office (purchasing, contracts and the Central Computer Bureau at Norwich).

The four main Divisions of the new Agency will therefore be as follows :

- Projects and Support Services Division.
- Policy, Planning and Financial Control Division.
- Technical Services Division.
- Contracts Division.

Individual departments will continue to be responsible for their own computer operations, subject to financial approval of new ADP projects by the Central Computer Agency, which will also provide advice and guidance as necessary. Sponsorship of the computer industry will remain with the Department of Trade and Industry.

In a written Parliamentary Answer on 23rd March, 1972, Lord Jellicoe, the Minister in charge of the Civil Service Department stated :

> "The Government takes the view that computing in Government requires an increasingly close association between policy, planning and execution, as recognised in the recent Report from the Select Committee on Science and Technology. . . . In future, Government as a major computer user should be able to speak more clearly with a single central voice. The Agency itself will offer greater scope for increased professionalism and for computer careers in Government".

Before the formation of the CCA, the CSD had concerned itself with the future potential of computing and had commissioned in 1970 a study into computer usage and computer policy in Central Government. The report arising from this study, entitled Computers in Central Government - 10 Years Ahead was issued in 1971 and produced many enlightening and challenging findings, viz :

- there were 30 different series of computers in the United Kingdom Government which severely limited the extent of compatibility between different computer installations ;
- there was almost a complete absence within Government of any machinery for systematic post implementation appraisal (of computers) but the annual review of profitability of computers was beginning ;
- most departments wished to retain full control of activities for which they bore ultimate responsibility thereby excluding any sharing of time or computing services ;
- there was no central plan for Government as a whole (for computer applications) ;
- incompatibility from use of many computer series was perhaps the most serious deficiency in computer equipment in Government at that time. The costs of incompatibility were considerable on utilisation of equipment... where work could be spread out, incompatibility required reprogramming for another series before another computer could be used ;
- lack of effective co-ordination machinery and central planning had not been a cause of serious concern in the past, the consequences were future because further unco-ordination could retard future programmes ;
- the most pervasive of all possible developments was the use of multi-access computing time sharing in a large computer. A decision lay ahead as to which agency would be the "computer bureau" ;
- integration would need the highest priority, in adoption by departments of standard codes, classifications, data formats and terminology, and there would need to be certain levels of compatibility between computer installations ;
- the exchange of data in machine readable form between branches of departments or between departments and external organisations was already beginning to take place and should expand rapidly. Current practice was by magnetic tape, later direct information exchange between computers over transmission lines should be achieved ;
- the integration of systems at the simplest level might take the form of a central data bank of basic information (names and addresses) which could be drawn on for separate use by many users, and later in the manipulation of large volumes of data[1].

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1) Computers in the Central Government - 10 Years Ahead, the Civil Service Department, Her Majesty's Stationary Office, London, 1971.

The report, while not officially adopted as Government policy, has received wide circulation and is being reflected in the current activities of the CCA. For example, Planning and Standards branches have been formed. Planning, co-ordination and integration were the themes of the 10 Years Ahead document and are evident in the form of planning which the CCA is seeking to conduct. Such planning has two phases :

> short range planning, from current plannings to work on design of systems which may take 2-3 years and may last for 5-7 years. The United Kingdom Government has so far planned for this sort of period ;
> long range planning (strategic planning) is for periods in excess of 10 years. In the United Kingdom only a beginning has been made to frame a "broad background against which current decisions can be taken and shorter term objectives set"[1].

The objectives of long range planning are to "exploit to the the full the potential of computers to contribute to the efficiency and well-being of the public service, and to ensure as far as possible, that decisions on computer systems taken at a given point in time will not restrict future freedom of action to improve the machinery of Government in the widest sense"[2]. Planning research involves hardware, software and manpower needs. The Policy and Planning Division of the CCA is working on both short (tactical) and long range (strategic) planning and toward development of central policies for ADP.

In 1970, the Planning Branch inaugurated a "Central Planning Document for Computing in Central Government". This contains the plans for the development of computing in each government department for the current year, plus five further years. Summaries and trends based on an analysis of these plans are also included in the document. It is intended that these Departmental Plans will be rolled forward each year, and will be reconciled with the relevant financial forecasts. The full Central Planning Document is circulated to all government departments, but not outside government. The information called for in the Departmental Plans includes :

a) Functions of the organisation and organisation of ADP planning responsibilities ;
b) Description of present computers installed ;

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1) Long - Range Planning of Government Computer Requirements - speech by W. R. Atkinson, Computer Division, Civil Service Dept., London, to 5th Conference, ICA, Rome, 19th - 21st October, 1971, p. 2.

2) Ibid., p. 4.

c) Interaction of computer systems through links with other departments or public bodies, also the scale of interaction is called for plus future developments involving non-government organisations;
d) Use of external support such as software houses, consultancies or programming agencies ;
e) Whether national or international (ISO) standards have been adopted, including information on any data format standards ;
f) New approved projects, costs, hardware, location and estimated acceptance date. Also, information on multi-accessing if such work is to be involved ;
g) Projects identified but not yet started ;
h) Impact of ADP on the work of the Department ;
i) Possible future developments in terms of estimates of time scales for implementation of any foreseen applications ;
j) Possible legislative changes ;
k) Effects of possible entry into EEC ;
l) ADP staff, a tabular analysis of staff numbers, both actual and forecast. They should reflect any staff required for new projects ;
m) Equipment, a tabular statement of equipment in use at installations with forecasts of acceptances during the next six years ;
n) Software including existing and forecast installations, details on software under several categories ;
o) Data amount and content of data held on their main files ;
p) Data preparation equipment, description and location and costs of such equipment and,
q) Networks and terminals involving type of multi-access working, location of terminals, number and type of terminals and their cost[1].

The preparation of Central Government guidelines, as recommendations of policy or of good practice, are envisaged for a variety of subjects, for example, the use of high level languages, and data preparation. The immediate concern has been to frame a policy in the United Kingdom for procurement of outside software. Standard procedures are applied to the development of new ADP projects. During the course of implementation, the CCA can influence departments before giving planning approval to the recommendations which may arise from a feasibility study, and later when CCA is approached to give financial approval.

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1) Central Planning Document for Computing in Central Government, Questionnaire Outline and Explanation, prepared by Planning Branch, Computers Division, Civil Service Department, London, 1971.

The CCA is aware that, given technical feasibility, there is considerable scope for improvements in efficiency resulting from the free interchange of data through large multi-access units. Equally the CCA knows that the integration of masses of data runs counter to considerable tradition of independent ministry information holdings and some laws barring release of personal files even from one Ministry to another. The apparent conflict described here has occurred in other countries, but the opposition to sharing records by various ministries and municipalities plus a keen sense of personal privacy concern in Parliament may soon result in some debate on the notion of information integration.

The CCA has in the past had little involvement in computer systems after they have become operational. Recently, however, post-implementation reviews have been instituted. Five were conducted in 1971 using a procedure where a committee of consultants (3 consultants with one senior and one junior officer of the Department) spend a three to four month period reviewing the current state of development of a computer system in order to :

a) assess the efficiency and effectiveness of the present operations and suitability of the equipment ;
b) comment on the progress made up to the present time for achieving the tasks planned for the installation ;
c) recommend improvements capable of being implemented during the residual life of the present equipment ;
d) draw conclusions from the experience of the current project in order to assist the planning for the next system.

The issue of computers and privacy arose in the United Kingdom in the 1960's and has resulted in a number of proposals to regulate computer usage or data base management in the public and private sectors. As a means of giving official attention to the general issue of privacy, the Home Secretary appointed a Committee on Privacy in January, 1970 :

> "To consider whether legislation is needed to give further protection to the individual citizen and to commercial and industrial interests against intrusion into privacy by private persons or organisation or by companies, and to make recommendations".

This Committee has completed its report which is expected to be published in July 1972. In the public sector a similar project, though limited to a study of Government computers and privacy, was begun nearly two years ago.

An interdepartmental group under the leadership of the Home Office initiated a comprehensive survey of the categories of personal information held or likely to be held in the computer systems of Government departments, and rules governing its storage and use. (Similar studies are being carried out in local government and the National Health Service). CSD was given the responsibility of carrying out the survey and for tabulating and analysing the results.

The formulation of a Government data protection policy would seem to be considerably facilitated by this survey. There is an active, open interest within the Government, however, on how any policy arrived at should be implemented. Suggestions run the gamut from self-enforcing regulations to an overseeing ombudsman, to an outside high council to monitor data use by the Government and private enterprise. The report of the Commission on Privacy may lend guidance as far as recommending the nature and substance of a data protection Act and its most efficient administration.

An interministerial high level official committee on computers has been created, where disputes over policies and introduction of new plans can be discussed and resolved.

Parliament

The United Kingdom Parliament has shown considerable interest in the potential infringements on individual privacy through creation of computer data bases, Government policy toward computer technology and support for the British computer industry. The debates and legislative proposals over data protection have consumed the greatest amounts of time and public attention but the committee studies on Central Government computers and strenghtening the largest British computer manufacturer may yield the earliest concrete results. Regardless of the party in power, the British Parliament is acting in a way similar to that of the United States Congress in seeking to capture initiative where the Government has not yet settled on a position.

Over the past decade concern has arisen that the individuals's right to control sensitive information about himself was being eroded by new technology. The fears of those who raised questions about wiretapping, bugging devices and unauthorised manipulation of data in Government and private data bases was reinforced by studies indicating that present laws and judicial precedents do not strongly define and defend a "right to privacy". The philosophical concerns about computer technology were articulated skilfully by several members of the House of Lords, among them the Earl of Halsbury who summarised the general tone of the two-hour discussion on "Computers and Personal Records" as :

> "No secret information on a computer, and right of print-out for the person to whom the computer records relate"[1].

The United Kingdom Parliament has been provided with two vehicles upon which to act if persuaded that some control over computers is required. In 1969, Conservative Member, Kenneth Baker introduced a Bill "to prevent the invasion of privacy through the misuse of computer information"[1]. This measure sought to create a register of all data banks operated by all agencies of central and local government and selected personal data users. No action was taken and the Bill lapsed. A Bill in the current session, sponsored by Labour Parliamentarian Leslie Huckfield on behalf of himself and the National Council of Civil Liberties[2] is the "Control of Personal Information Bill" which could establish a data bank tribunal to license the operation of data banks containing personal information. This tribunal would grant licences to the operators of data banks "upon terms and conditions suitable for their purpose". This Bill was defeated in 1972.

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[1] House of Lords, HMSO, London, 3rd December, 1969, p. 123.

A Subcommittee of the Select Committee on Science and Technology met in 1970 and in 1971 to consider "the prospects for the United Kingdom Industry in the 1970's" and on 20th October 1971, issued its report[3]. The main subject of the hearings that the report indicates "is the future of the British computer industry and Government policy towards it".

> "Government has two distinct functions in connection with the computer industry. First, the Department of Trade and Industry, like the Ministry of Technology regards itself as the "sponson" of the computer manufacturing industry. Second, individual government departments are customers of the computer industry. Although each department has primary responsibility for the computers it purchases, it is advised, and to a degree supervised by the CSD. These two essential distinct functions are confused by the special relationships of Government with ICL, as part of its sponsorship role and by the preference given in Government procurement to ICL computers.
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> "Central Government represents about 15 per cent of the British market and the scale of its activities provides scope of the implementation of complex and advanced systems. Government procurement policy, its efficiency as a customer and its procurement procedures inevitably influence the United Kingdom computer industry and the policy to that industry of users, particularly local authorities and nationalised industries. This influence makes it all the more important that Government procurement policy be sufficiently far-sighted and comprehensive.

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1) Full text reprinted in Computers and Automation, 3rd July, 1969, p. 13.

2) See Privacy Under Attack, National Council for Civil Liberties, 4 Camden High Street, London, 1968.

3) Report : The Prospects for the United Kingdom Computer Industry in the 1970's ; the Select Committee on Science and Technology, Session 1970-71, Volume 1, HMSO, London.

> "Individual departments are primarily responsible for their data processing and thus for formulating their computer requirements. Each of them is bound to have regard to the overall procurement policy decided upon by the Government. The CSD is responsible for general policy on the use of computers in Government and for giving advice to the Treasury, Stationary Office and computer using departments. Departments are instructed to consult them at the inception of every project but the initiative for new systems rests largely with the user department.
>
> "The influence of the CSD on procurement does not extend to computers integrated into industrial process control, navigation, aviation or weapon systems which are procured independently by the operating department.
>
> "The Department of Trade and Industry plays an active part in promoting the application of procurement policy outside Central Government"[1].

The Committee recommended that preference be given to those firms which contribute most to the economy and to national objectives in the computer field. Financial support to the British computer industries should be supplied mainly in the fiels of R & D. Price and performance are said to have great importance, but there are overriding priorities such as the contribution made by the supplier to the United Kingdom balance of payments, R & D conducted in the United Kingdom, possible United Kingdom influence on parent company, and participation of shareholders.

Another concern of the Committee was the strengthening of domestic software and service industries. To do this, the Committee urged that each tender should contain an itemised "Statement of Work" against which bidders would enter their bids for each item. This was designed to reduce the role of subsidiaries of foreign companies and to help companies "whose presence in the United Kingdom furthers our national interest"[2].

In its report, the Committee treated the issue of overall co-ordination of computer development in the Central Government, but in the context of procurement policy. It noted :

> "The process of introducing computers in Central Government has in most cases been a joint one between Departments and the CSD, with the CSD stimulating and advising"[3].

The Committee concluded that there should be greater co-ordination in the use of computers within the Government. "In the latter half of the decade data transmission facilities will have

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1) Ibid., paras 134, 152, 153 and 159.
2) Ibid., para. 221.
3) Ibid., para. 154.

advanced to the point where the co-ordination of the computing equipment within the Government control will be essential. Purchasing policy and procedures must take account of this trend"[1].

Establishment of a single, strong, technically competent agency to produce effective purchasing procedures was recommended. The recent formation of the Central Computer Agency may be regarded as a positive response to this recommendation and is a marked step forward for the co-ordination effort.

British Computer Society

The role of the British Computer Society, a private professional computer society, in the complex and controversial issues under debate in the United Kingdom, has no parallel in other countries. A blend of respected technical competence and civic awareness has thrust the Society into most controversial arenas. Some 16,000 British computer professionals have become members of the Society which recognises that developments in computer technology will bring larger installations "having an impact on the life of the average citizen in many ways"[2]. The Society has taken action to establish a Code of Conduct for its members and drafted a Code of Good Practice for computer operations. The principles of the Code of Conduct are brief :

> "A professional member of the BCS (a) will behave at all times with integrity. He will not knowingly lay claim to a level of competence that he does not possess and he will at all times exercise competence at least at the level he claims; (b) will act with complete discretion when entrusted with confidential information ; (c) will act with strict impartiality when purporting to give independent advice and must disclose any relevant interest; (d) will accept full responsibility for any work which he undertakes and will construct and deliver that which he purports to deliver; (e) will not seek personal advantage to the detriment of the Society"[3].

They are supplemented with explanatory notes of guidance and enforced by three committees (investigations, disciplinary, and appeals) of the Society. The Code of Good Practice was prepared as a guide for both computer professionals and data processing users.

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1) Ibid., para. 234.

2) The British Computer Society, Aims and Activities, published by BCS, 29 Portland Place, London, p. 7.

3) The British Computer Society Code of Conduct ; approved by Council, 17th February, 1971, published by BCS, London.

The Code consists of 42 check lists in six areas : organisation, proposals, and contracts, system development operation and systems review[1]. Three appendices discuss documentation, report writing and training. It is designed for periodic evaluation to allow the computer professional and data processing manager to ascertain if the procedures being followed constitute good practice. Acceptance and possible enforcement of the new code are not yet determined by the Society. It is, however, an important step in identifying items that computer professionals and others should review when planning a course of action.

Sharing the views of a number of British citizens that legislation is necessary to protect the individual citizen and commercial interests against unwarranted intrusions into their privacy, the Society recommends that a licensing system be considered for owners of "sensitive" data bases[2]. The licensing system would be administered by special new machinery of the State. This new public authority would serve as "watchdog" over developments in the United Kingdom and abroad on intrusions into privacy, enforce the licensing legislation and conduct research and education into privacy and public understanding. The Society, or at least some of its spokesmen, believe that the organisation itself might serve the Government as licensing authority for computer systems and computer professionals. There is some history of independent professional associations undertaking tasks for the Government requiring high competence and impartiality. A Data Bank Research Project to collect information related to data base content, security, confidentiality procedures and determine how an independent licensing body would function, is about to begin its work, which will require 18 months preparation.

When a controversy arose during the conduct of the 1971 census over standards of confidentiality of data held by the Office of Population Censuses and Surveys, the Society offered to help with problems of assuring that adequate safeguards exist. The Census Office accepted the Society's willingness to help. Such a function on a continuing basis appears to be one the Society would welcome, and there is some interest in it by officials of the Government.

Local Government

Co-ordination of ADP at the municipal level has been organised through the Local Authorities Management Services and Computer Committee (LAMSAC) which, with a small staff of experts,

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1) The British Computer Society Draft Code of Good Practice, published by BCS, 23rd September, 1971.

2) "Submission of Evidence to the Commission of Privacy", prepared by the Privacy Committee of the BSC, March, 1971, p. 24.

encourages computer applications and exchange of information among local authorities. LAMSAC is an advisory body, not created by statute, to give technical assistance and has no data processing activities of its own. A link to the Central Government exists through the Joint Central and Local Government ADP Consultative Committee which involves largely the same discussion of problems and new developments between the two sectors.

Local authorities may exercise a high degree of independence from the Central Government and therefore interest in computer service centres or vertical integration of data into Central Government files has not been high. The Central Government exercises some influence on local government through financial subsidies, but their budgets are determined independently by their councils. However, associations of municipalities, local authority officers and local political parties can act to exert influence on the Central Government[1].

Just as Departmental autonomy exists in the Central Government, with co-ordinating carefully fostered, local authorities have a high degree of independence. Central Departments must rely on data from local authorities but a conflict exists as to which level shall be responsible for collecting particular parts of data in a prescribed form[2]. The determination of methods of linkage and financial responsibility with local authorities remains a major challenge to a fully developed computer applications plan for the United Kingdom.

THE NETHERLANDS

In the Netherlands, the Government at the national level has Queen Juliana as its head with a cabinet of Ministers overseeing thirteen ministries. The Parliament consists of a First and a Second Chamber. The former is elected by the Provincial Councils, the latter by the people. The Provincial Commissioners are appointed by the Government. There are 850 municipalities (total population about 13 million) with a municipal council elected for four years and the Mayor appointed by the Minister of Home Affairs.

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1) For more details see "Information Technology and Urban Management" by Paul Kenneth and Claude Maestre, OECD Document, 1972 (to be published).

2) Op. cit., Address of W. R. Atkinson, Intergovernmental Council, p. 7.

The Ministry of Home Affairs is responsible within the Government for :

a) administrative affairs, including the appointment of some local officials ;
b) the civil service in Central Government ;
c) police and public safety in the provinces and municipalities ;
d) financial overseeing of municipalities ;
e) organisation of automation.

Principal overseer of this Ministry is a Cabinet Minister ; under him is the Secretary of State who participates at Cabinet meetings. The Government, following the 1971 parliamentary elections, gave a new and strengthened mandate to the Secretary of State for overall co-ordination among ministries as to the policy of automation and of organisation[1].

The Ministry of Home Affairs is the co-ordinating ministry while each Minister is responsible for the management of his own department. In accordance with the 1971 realignment of responsibilities within the Ministry of Home Affairs, the Minister is in charge of administrative affairs, civil service, police and public safety. The Secretary of State was given strengthened authority over automation organisation and new duties for financial overseeing of municipalities. Automation co-ordination extends to financial, economic, technical and organisational matters.

An Advisory Commission for Automation was created by the Secretary of State in 1957, to advise him on requests and plans for computers. Early functions of the Commission were providing technical information and policy guidelines, as its membership was largely of computer specialists ; later on, in the mid-1960's, the group became more advisory. Commission membership is inter-ministerial, members give part-time service and individuals hold various types of posts within their ministries. At present among those serving on the Commission are the Director General of Statistics, a representative of : the Ministry of Finance, Civil Service Board, Public Accountant and Civil Audit Service, the PTT and a professor specializing in computer hardware.

The Commission is currently working on three assignments beyond their normal role of considering proposals for new computer installations. First is the suggestion by the PTT to develop a master address code for the Netherlands. Another is designing a new plan for the Central Government automation in relation to local government. A third is finishing long-standing work on a central population registration system involving the giving of personal identification numbers to all inhabitants of the country. Long-range planning in terms of preparing a Central Government policy

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1) Interview with F. G. Kordes, Director, Directorate for Government Management Service (Management and Computers), Ministry of Home Affairs, The Hague, 4th February, 1972.

for public data bases is to begin soon as a follow up to a 1969 by the Commission.

A Directorate for Government Management Service (Management and Automation), serves as the secretariat for the Commission on Automation, among several other duties within its overall function as advisor to the Secretary of State. Other ongoing work includes :

a) information system advice for departments needing advanced technical assistance ;
b) the central population registration project now in the final stages prior to implementation ;
c) supervising the Government Computer Centre at Apeldoorn, and ;
d) acting as central co-ordination point of Government for communications with the National Municipal Information Processing Co-ordinating Board.

Automation Plan of 1969

The "Policy on Automation in Government Departments", prepared by the Commission on Automation in 1969, gives considerable attention to centralisation or decentralisation issues. The Commission was attempting "to see where to put single central place or decentralisation for computers in ministries"[1]. Centralising features were seen as :

i) cost, it is cheaper to use one large computer ;
ii) better use of computer experts, better exploitation of scarce and expensive skills ;
iii) use of large computers makes for versatility ;
iv) integration, for combining data bases ;
v) fewer worries for users with a large system[1].

Such factors which tend to unify computer services, are contrasted with decentralising considerations. Because executive government is organised on a decentralised basis, the provinces and municipalities have considerable independence of the Central Government, and universities and some semi-governmental bodies are also independent, it is unrealistic to build a computer policy which would attempt to direct work from one agency of the Central Government. There were a number of features in a commendable decentralised plan :

a) there would be less delay in having an agency's work processed (1969 availability) ;
b) better precision of the type of result if agencies had their own computer operations ;

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1) Reported in ICA Information, N° 1, September 1969, p. 45, by F.G. Kordes, secretary, Commission on Automation.

c) independence of action ;
d) safety, security from tampering and breakdowns ;
e) computer installations conveniently located.

The Commission forecast for the decade 1975-1985 that "a single, central system serving all the public authorities must be considered illusory". "A number of computer centres should be established, each connected with a group of users and each interconnected. They should be built from large existing government installations, for example, the Government Computer Centre, those of the Ministries of Defence, Transport and Water Control, Tax Department and Central Statistical Office. New ones will also be required, particularly for provincial and municipal accounting, etc.

The Government Computing Centre would continue to be the leading general computer service for projects not placed in other centres. Establishment of a second general computer service should not be ruled out, if it is decided to set up a separate centre for recording the vital statistics, etc., for every resident in the Netherlands and basic information on all business firms in the country[1].

In the period prior to 1975, the Commission saw a need to prepare for greater inter-connections. They called for additional software specialists at existing computer centres, for multi-programming and real-time processing using data transmission. It was recommended that systems be tailored specifically for the user. These staff specialists should be hired for placement with particular operational agencies needing help. Users must be familiar with computer operations. When placing computers the possible projects and equipment required must be considered in placement.

The continuance of inter-ministerial co-ordination was recommended. The Advisory Committee for Promotion of Government Efficiency and Commission on Automation are "adequate to achieve co-ordination informally[2]". The possibility that a more formal structure should be adopted was considered, such as special co-ordinating bodies, particularly when there are interministerial projects for integration. These bodies would be under authority of the Civil Service Council to which they would be accountable.

The Council stated that implementation of these conclusions, the central theme being multiple large inter-ministerial functional centres linked through special terminals, should be carried out according to five recommendations, the Commission stated :

a) Utilise highly qualified systems designers and programmers who will have to be recruited and new equipment secured ;
b) Collect experts on administrative information processing in the Ministry of Home Affairs to help with the development of new systems ;

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1) Ibid., p. 58.
2) Op. cit., Report, Commission on Automation, p. 61.

c) Users must get much practical experience themselves ;
d) Placement of computers to be based on present needs and future interconnections and services ;
e) Use existing advisory bodies[1].

This report was circulated among the ministries and to Parliament, and while never "approved" in a formal sense, has since become a working blueprint for Central Government planning to date. Commission Chairman F. G. Kordes would like results of any new policy design to be more specific and call for more direct implementation, although prepared in concert with all major ministries affected and the municipalities. There seems to be keen awareness that a co-ordinating ministry, the Ministry of Home Affairs, must seek and retain confidence and co-operation from the twelve others in order to assure support for any masterplan for computer applications and operations .

The issue of privacy and data confidentiality has been raised by private groups and in Parliament recently. The 1971 census drew protests and some open non-compliance, due in part to certain questions. and the punch-card format for responses indicating the planned ADP use for the results.

Another articulated concern relates to the debate over a central personnel register involving the issue of identification numbers. As a means of giving a formal channel for investigation and recommendation to the Government a committee is at work on the privacy (data confidentiality) issue. The Ministry of Justice has installed a special privacy committee whose function it is to look into the broad privacy issue and data protection (manual and computer) in particular. This panel will devote special attention to the central population register plan as one of its specific charges.

The Netherlands have a number of statutory provisions applying to data protection, and although no evidence of wrongdoing or carelessness has been aired, public pressure exists for adopting new legislation to assure better protection of sensitive personal data. Private data banks have not caused as much alarm as extensively developed public intelligence systems which could be vulnerable to enemy seizure should the country be occupied in another war. Those statutes now operating to protect personal information are :

- Decree on Civil Population Register, 1967, stipulates that data stored in the civil registers are secret ;
- Penal Code, penalties provided for civil servants for violation of secrets, malfeasances, etc. ;
- Decree Creating Central Bureau of Statistics, requires maintenance of secrecy of records ;

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1) Op. cit. , Report, Commission on Automation.

- Bill regarding 1970 census, explicit reference to decree of Central Bureau of Statistics on obligation of secrecy ;
- General Act of State Revenue, states that no persons dealing with income tax data, from civil servants to private income tax consultants, may divulge their contents.

The Government Computer Centre handles projects from the Ministry of Home Affairs and other ministries requiring additional computer assistance. Technical help may be provided for Centre users if necessary. It has performed supervisory duties to optimize operation of other computer centres. Some local use of the Centre is available, but an attempt by municipalities to create regional capabilities means that its activities are largely on behalf of the Central Government.

Central Population Registration

The decision by the municipality of Rotterdam in 1966 to issue personal identification numbers in their register of persons prompted the Central Government to initiate a commission to study questions pertaining to establishing a central population registration system. This Commission for the Registration of Personal Particulars, often referred to by the name of its Chairman, T. J. Westerhout, had as its purpose to find out "whether in order to simplify central and local government records it would be advisable to introduce on a national scale the uniform identification numbers now available for registration of personal particulars"[1]. However, in 1967, as a means of assuring that any other municipal introduction of personal identification numbers would be coherent and capable of Central Government processing, the Council of Ministers decided to allot uniform number blocks to each municipality. The further mandate of the Commission was to propose the organisation of registration centres with ADP equipment, and how such a central plan should operate if the Commission would recommend such a proposal.

The Commission recommended the establishment of a central personal number system under the authority of the Ministry of Home Affairs, the first phase being :

a) distribution of a series of numbers to the municipal councils ;
b) registering the numbers on the personal record cards in the municipal population registers ;
c) informing a computer centre of the numbers registered, and the personal particulars to which they refer, possibly in machine script ;
d) where it has not already been done, converting the particulars into machine script ;

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1) Westerhout Commission, "Report Regarding the Registration of Personal Particulars", The Hague, September, 1969, p. 74.

e) having the particulars placed in order and the numbers checked by a computer centre ;
f) registering changes in the basic register, say, once a week ;
g) having the numbers included in the computerised records of several very large users[1].

The number itself is a random one with error correcting features and unlike those of some countries provides, in and of itself, no identifiable characteristics. Other phases of adopting the number system involve putting the system into full operation as far as updating, distribution of information to users, including **municipalities** providing the basic data are concerned.

These Westerhout Commission recommendations were supported by the Government, and the Ministry of Home Affairs began to transform the report into a legislative and administrative plan for adoption and execution. A bill authorising creation of a central population registration system in the Netherlands will be presented to Parliament in 1972. Under the new law, only governmental bodies, municipalities and ministries and other Central Government sponsored authorities can have access to this system. It is contemplated that private institutions such as banks and insurance companies could later interrogate the system as a locator for clients.

The establishment of Central Population Registration in the Netherlands is considered to have considerable impact for two reasons. First, information contained heretofore in municipal personal registration registers was transferred manually to ministries of the Central Government by the municipalities. This new system gives a new role and power to the Central Government. A second reason is the introduction of a standard personal identification code ; this will make integration of public and private files more feasible as the requiring of this number on public and private forms becomes widespread. There has been both public and parliamentary criticism that plans for adoption of the registration number are too restrictive, not taking into account the vast compiling and manipulation of personal files facilitated by the introduction of a standard identifier.

The maintenance of central population register files by the Central Government will be of considerable assistance to ministries which have not previously been able to obtain address, marriage, divorce, death and family membership data from municipalities. On an individual request basis, any Ministry will be able to receive identification information from the central register. The potential for statistical analysis by Central Government organisation is considered by planning agencies to be an important new resource.

As to the Central Persons Administration, rules of access to public and later private users will partly be considered in the light of individual privacy. However, the system is seen largely

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1) Ibid., p. 36.

as an automated mechanism for providing basic personal characteristics, rather than a major new tool for merging many types of personal files. Attention to these issues will more likely fall to the Commission on Automation in its broader policy studies.

Netherlands Municipalities

Strong concerted action in ADP development has taken place among Dutch cities and villages. The Association of Netherlands Municipalities has organised a Foundation for the Development of Automation with Municipalities[1]. The object of co-operation among municipalities is :

a) information processing ;
b) systems design and implementation ;
c) education and training, and
d) consultation with various agencies.

The carrying forward of the joint computer efforts has been through the organisation of regional automation centres. Each of nine regions, organised according to one and a half million inhabitants and along provincial lines where possible, is responsible for co-ordinating all regional activities, systems adaptation introduction, input data preparation and information processing. A general board and an executive board are elected from representatives of the participating municipalities. Sometimes provincial authority is represented on the board. Regional centre costs are pro-rated against the number of inhabitants in each participating municipality, not on a cost per project or other basis.

At national level, the Foundation has a General Board of Directors and an Executive Board of Directors whose members are from regions and municipalities acting as regions. The Board is assisted by supervisory groups, one for each system developed. Overall tasks of the Foundation include co-ordination with respect to the development and the execution of systems and programmes, carrying out application studies, co-operation with Government, provinces and municipalities. In practical terms, the Foundation gives advice on the creation of Regional Automation Centres, organises education, training and instruction programmes, drafting and elaborating systems projects and related introduction requirements.

In deciding on the regional data processing centre approach, the Association of Netherlands Municipalities rejected other possible alternatives :

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[1] "The Organisation of Automation with Netherlands Municipalities", December, 1970, Association of Netherlands Municipalities, Oude Molstraat 34, The Hague. See also "Basic Plan for the Automation with Netherlands Municipalities", published by the same organisation.

a) Creating local centres. This would be too costly, there would be less integration of information above the municipality level, which cannot be provided efficiently, and specialists to operate these centres would be inadequate.

b) Forming a National Centre. A country of 12 million is too large, requiring too much hardware and software, such centrally located operations would adversely affect municipal rights and decision-making and communications between the Centre and municipalities would be complicated.

c) Establishing functional centres. Integration of data at the municipal management level would be difficult ; similarly, the operations and files of different systems would be difficult, peak work-loads cause problems and communications would be hard to organise[1].

The plans for the municipalities' regional computer centres may fall short of expectations for several reasons. Some cities or groups of two or three communities already operate computer centres and are reluctant to join the regional plan. As many as one third of all 800 municipalities may not participate in the Foundation plan, according to reports ; this could seriously weaken the universality concept in the plan. While the Central Government co-operates and subsidizes this regional centre project approach, it insists on technical information being made available to all municipalities. The close inter-relationship between the Central Government and municipalities in the Netherlands make a totally separate information handling system seem awkward if not undesirable. Indeed solution of this issue appears paramount to all others in a new central plan now under development.

JAPAN

The Japanese Government is pursuing an ADP policy which is called the National Information System (NIS).

> "We conceive a national information system as a total one in which information systems in individual enterprises and government agencies are organisationally interrelated rather than confined to their respective bounds of activity. In our

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1) For more details, see "Information Technology and Urban Management", by Paul Kenneth and Claude Maestre, OECD Document, Paris, 1972, (to be published).

> sense, therefore, an NIS does not signify "governmental" information system, although the term "national" may impart that impression. Much of it will consist of systems developed and maintained by private firms. In addition, it will include various sytems operating between government agencies and between private firms and government agencies"[1].

NIS has many characteristics of a very extensive network that systematically accesses and outputs information :

> "Such information flows through communication channels or by means of documents, drawing, tapes, disks, and such other physically transported means of recording. An NIS may involve both on-line and off-line networks.
>
> "An NIS will begin as a group of local systems developed between parent firms and their subsidiaries, between manufacturers and their distributers, and between government agencies closely related to each other in some specific areas of activity. Such systems will gradually grow in scope, develop complex ties with one another, and eventually merge into a vast network encompassing the entire society"[2].

If there is to be an NIS in Japan, as the foregoing predicts, two major ingredients are involved. One is technical, the other management or administrative. The technical side will certainly be as advanced as any in the world and is of less concern here than the concept of Administrative Information Systems (AIS). To accomplish the administrative role in NIS, administrative agencies "need to grasp accurately the economic and social changes of the day". This involves rationalisation of administrative procedures, improved service, better planning, more effective execution and control of policy - all based on improved quality and access to information.

> "We need to develop administrative procedures for new objectives, and for this purpose we must first switch from the conventional way of thinking in favour of vertical or "pyramidal" organisation to more functional "network" organisation principles emphasizing the information flow, and more sophisticated information processing functions in support of the new principle.
>
> "Salient features of this development include the following :
>
> "a) A change-over from the concept of the 'mechanist' view of administration to the idea of 'systematization'. Systematization of administration requires abundant, accurate,

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1) "Further Developments of the National Information System in Japan", OECD Document, 1971.

2) Ibid., p. 1.

information, which must be collective and dynamic rather than individual and static as in the past. It should include systematic as well as local, elementary information ;

"b) A change-over from authoritarian administration to functional. This means one from 'control' of administration to 'guidance' based on systematic, intelligent activities. Therefore, we need support of advanced thinking to provide the basic material for administration ;

"c) A change-over from the 'hard' type of organisation to the soft type. For this we require information adaptable to fast-changing administrative needs. We also need information primarily designed to stimulate action rather than merely to be understood ;

"d) We need a change-over from the 'tree' type organisation to the 'network' type. It requires uniformity in multi-purpose administration. Information processing functions must serve the increasing organic character of information"[1].

Efforts for AIS development fall into two categories : (1) development of special service information systems and planning under individual governmental agencies, and (2) research and development in technical problems. Nowhere is the source of the political supervision (or authority) for this plan made clear. Cited among the problems of reaching AIS are entrenched systems, practices, customs, laws, regulations, which must be abolished. Annex II presents a state-of-the-art description of the Japanese NIS as of September, 1971.

SWEDEN

The Swedish Government is organised at two distinct levels : ministries and agencies or boards. Policies are framed in the twelve ministries, composed of staffs of about 100, in consultation with the Council of Ministers. Attached to each Ministry are various agencies (or boards) which administer the laws, policies and directives of the Government. Normally, when major new policies must be decided on or significant reforms in administration considered, a Royal Commission is appointed.

The Statskontoret, the Swedish Agency for Administrative Development, operates under the Minister of Finance, and has

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1) Op. cit., "Further Developments", pp. 5-7.

the function of rationalising the state administration. This involves planning and co-ordination in public administration, developing efficiency and effecting cost savings. To accomplish these objectives, the Statskontoret has been made responsible for co-ordinating acquisition and utilisation of computers in Central Government agencies and for managing the State Computer Fund. In its formal capacity as co-ordinator of rationalisation and computer utilisation, it has no formal decision-making authority but an advisory function to the public services and the ministries. This concerns information processing, organisation structure, personnel and other problems. However, as manager of the State Computer Fund it is responsible for contracting hardware and software for all agencies, which means that any disagreement would be brought by the Statskontoret to the Council of Ministers for resolution. So far, this has never occurred[1].

Monies for the Fund are approved by Parliament and allocated to Central Government agencies for all State services including higher education and research institutions. The Fund is operated by the Statskontoret for authorised purchasing for public agencies. Agencies pay annual charges to the fund for use of hardware and software.

Through fiscal influence and technical advice, Statskontoret exercises control over computer usages but weaknesses in planning are inherent due to difficulties in getting agencies to commit themselves to estimates earlier than is required to match their relatively short-range fiscal demands. Their long-range plans are primarily established for specific projects under review or contemplation, while the more continuous development processes tend to be less documented. Under these conditions a concise and comprehensive plan has not been yet achieved. The issue of centralisation over decentralisation is receiving considerable attention. A blend of the two is considered by some officials as the wisest course : centralising techniques, design, standards, rules of operation and review, but not necessarily the central file plan. Several large centralised data bases are already operating in public administration. They include population register, land register, car register, law enforcement, social security and labour market administration registers.

The population registers are maintained in parishes, counties and centrally. At the parish and county levels the register is developed to serve three purposes : population information, taxation registry and a register of real estate for taxation purposes. Therefore, in addition to the basic facts, such as name, address, birth date, residence and nationality, information is required on next of

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1) The Applications of Information Processing in Public Administration International Institute of Administrative Sciences, XI International Congress of Administrative Sciences, Rome, 6th-11th September, 1971, p. 37.

kin, church membership legal incompetence, insurance and welfare benefit status, preliminary tax code, military service and possession of firearms. Each November the taxation registry is formed from the residence status of each person. Lists are prepared, preliminary taxes calculated and assessments made. The real estate in the real estate register is given identification numbers and the owners identification by their person numbers. The population registry is used for statistical purposes and lists are exchanged with other agencies and private firms (banks and insurance companies).

The car registration system serves many purposes, including notification of insurance payments, car inspection, statistical and taxation questions. Law enforcement agencies will use it as a dimension to their data system in a hunt for stolen cars. A register of persons and offences is currently being computerised, and labour market administration is planning an automated inquiry service for unemployed persons.

Several commissions are at work on issues which need decisions on computers. Those relevant to this study are the Royal Committee on Publicity and Secrecy, the Royal Committee on Co-ordination of Governmental Data Banks and the Royal Committee to Investigate Measures of Industrial Policy in the Field of Data Technology.

"The main task of the Royal Committee on Publicity and Secrecy is to investigate the whole question of publicity and secrecy. The Committee which was formed in 1969, published its first report on 30th June, 1972. This report covers two matters : firstly, the application on data media of the principle of public access to official records and, secondly, legislation for the protection of personal integrity in view of the risks of computerised filing of citizen data. The Committee suggests legislation concerning public access to official computerised data, of the same kind as the existing legislation concerning records. As a means of protection for personal integrity the Committe suggests a data legislation implying that special permission is needed for computerised filing of citizen data. A special authority should examine the applications for permission, and control all ADP in this field in order to prevent undue offence of personal integrity. The legislation should also contain rules on obligation to control the rightness of filed data for those making the files and on the right of those persons being filed to get information about the content of the file".

The Royal Committee to Investigate Measures of Industrial Policy in the Field of Data Banks and computer applications in all phases of public administration was appointed by the Minister of Industry a year ago. The centralisation vs decentralisation of data in Government and what are proper policies for integration and control of data bases are being studied by the Royal Committee on Co-ordination of Governmental Data Banks. This Committee is working under the Minister of Finance and has close relations with the Statskontoret[1]

NORWAY

The Norwegian Government is a political collegium consisting of the Prime Minister and 14 Cabinet Ministers. A Ministry has the following functions :

- to act as a secretariat for the Minister and prepare formal presentation to the Government ;
- to direct and co-ordinate the activities of subordinate directorates, committees and councils.

The two ministries most directly concerned with the formulation of data processing policy are the Ministry of Finance and the Ministry of Consumer Affairs and Government Administration.

The main body engaged in formulating such a policy is the Data Processing advisory Committee. The Data Processing Division of the Government Institution of Organisation and Management (Rasjonaliseringsdirektoratet) acts as secretariat to the committee whenever the need arises.

The Data Processing Advisory Committee was established in 1961 with the mandate to cover all data processing questions of importance within Government administration. It is, as its name suggests, a purely advisory body with the following functions,

- the formulation of guidelines for the planning and development of new systems ;
- long term planning for the development of integrated data processing systems and the purchase of equipment ;
- advising the various government authorities on important EDP questions ;
- analysing the results of the use of data processing methods in Government administration ;
- keeping itself continually informed on the use of data processing equipment and methods within the Government administration.

To ensure that the Committee can carry out its work in the best possible way, all Government institutions have been informed that

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1) For more details see K. Lenk, Automated Information Management in Public Administration, Informatics Studies, N°4, OECD, Paris, 1973.

the Committee must be consulted on all plans concerning the use of procurement of data-processing equipment.

The Data Processing Advisory Committee has introduced two measures in connection with the purchase and rent of computer equipment, aimed at ensuring that the needs of the user are covered. These are :

a) The mandatory use of Government Standard Contracts for the purchase or rent of equipment, software or services ;
b) The optional (later to be mandatory) use of Government standard for formulating request for proposals.

The standards, which allow considerable flexibility, are to be used by all Government organisations, including universities and research centres.

The formal procedure for the purchase or rent of computing equipment, the engagement of consultant support or the use of the Computer Service Bureau beyond a certain sum (at present $ 7,100 (or kr. 50,000) is as follows :

- An organisation wanting to procure equipment or support is responsible for the analysis of its own requirements. for the publication of requests for proposals, the selection of suitable equipment, and must apply for the necessary funds through the normal budgetary channels, i.e., through the ministry to which it belongs ;
- It is the job of this ministry to get the approval of the Ministry of Finance for the use of such funds ;
- The Ministry of Finance asks the advice of the Data Processing Advisory Committee as to the suitability of such a purchase or rent, and grants or refuses the request.

In 1970 the Committee advised, and the Government subsequently approved, the establishment of the Norwegian State Computer Centre.

The primary task of the Centre, which was established 1st January, 1972, is to ensure that the computing facilities available at any time match the requirement of the Government Administration, and to manage these facilities. This centralisation of the administration and management of computer facilities enables the Centre to use its resources effectively with regard to the equipment itself and from the point of view of the user. The Centre has no responsibility for planning and systems development. This function together with questions of EDP-automation and the promotion of further integration lies with the Government Institution of Organisation and Management and the operating agencies concerned.

In Norway it has seemed natural to subdivide the problem complex into a consideration of those aspects dealing with the planning and development of data processing systems on the one hand, and the operational use of such systems on the other.

The present trend appears to be towards a decentralised registering of data. The data themselves may be kept and updated either centrally, locally, or both, but must be available both centrally and locally.

The population registration system in Norway is described in some detail in the OECD publication Automated Information Management in Public Administration. From this report it will be seen that the entire population of Norway is registered both locally and centrally.

The central population register is the keystone to this system. It is maintained by the Central Bureau of Statistics.

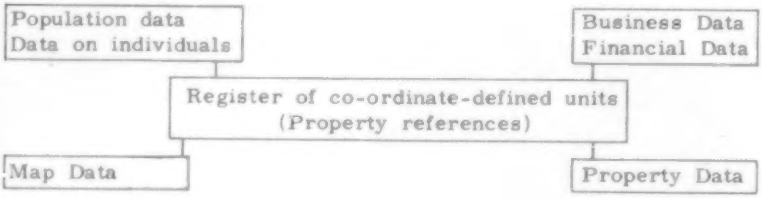
Each person in Norway is now allocated a "birth number" which identifies him/her uniquely. This number is being used by the tax authorities, the social services authorities, the Directorate for Seamen, hospitals e.g. for the registry of cancer patients, and by the Central Office for State Mass Radiography. Obviously it can thus be used as a key to the integration of information from various sources and will be used for both administrative and statistical purposes.

The Central Register for Motor Vehicles is used by the police, Directorate of Roads, State Motor Vehicles Control, defence authorities and for the collection of taxes and the generation of statistics.

One of the concrete pilot projects in operation is the introduction of regional information systems for social science planning and administration, where a co-ordinate or "Goedata" method of registration has been evolved.

"Geodata" denotes data regarding units localised directly or indirectly by the use of map co-ordinates. A co-ordinate-defined file with a unique numbering system covering all properties or co-ordinate-defined units can be built up and stored on an EDB readable medium. By the merging of files, the contents of these can be allocated on exact geographic location, and data can be arranged and aggregated over areas of varying sizes.

The information system may be roughly depicted as follows :



On several occasions members of Parliament have raised the question of policy involved in the establishment of integrated data bases in public administration ; public concern has also been growing. In view of this, the Data Processing Advisory Committee in 1970 asked the Institute for Private Law at Oslo University to carry out an investigation of the legal questions involved, especially with regard to the privacy problem. The report from the investigation was published in 1972[1]. The report presented, inter alia, a survey of the automated data processing which at present takes place within those public agencies that are most advanced in this fields. The firm conclusion in this part was that severe problems had as yet not arisen with regard to the protection of privacy, but the existing legislation was, on the other hand, inadequate to deal with the problems that might arise in the future. Among the recommendations of the report was the establishment of a permanent and independent body or council, empowered to follow the EDP development in the public sector, take an active part in the revision of legislation, give advice to the authorities concerning data security and privacy and especially to bring controversial aspects of planned systems to the knowledge of Parliament and the public at large.

The Ministry of Justice, being responsible for the drafting of new legislation concerning privacy, felt it necessary to give further consideration to this an other questions of policy. In 1970, the Ministry had appointed a Commission with the primary task of looking into the law governing Credit Information Agencies, but this Commission was also asked to give advice on what rules would be appropriate concerning private data bases in general which contained personal information. In 1972, when the above-mentioned investigation of the public sector was completed, the Ministry appointed a new Commission, with representatives for Parliament as well as from the administration. The Commission, which is due to report before the end of 1973, is asked to give an overall evaluation of the present state of the law governing public data bases containing personal information. The Commission shall especially look into : (1) the rules of procedure which are followed when new automated systems are presented and decided upon, and (2) the need for a public body or commission to control data bases and the way they handle personal information.

The Institute for Private Law arranged, in 1971, a symposium on data banks and society. The proceedings, which have been published[2], contain relevant material concerning the privacy problem as well as other aspects of the EDP development.

One of the contributions to the Symposium was a classification of personal information, which also contained a general sensitivity grading of the various elements of information. This work represents

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1) Erik Samuelsen : Statlige databanker og personlightetsvern, Oslo 1972, with a Summary in English, Oslo University Press.

2) Report from the First Oslo Symposium on Data Banks and Society, Oslo University Press, Oslo, 1972.

an attempt to give concrete references to the frequently stated need to "protect sensitive personal information". As nobody can define exactly what information should be regarded as "sensitive" - and in which context - this listing of 400 data elements under 14 sections may prove to be a valuable tool for policy-makers in Norway and other countries. The section titles are these :

01 Identification data
02 Family relationships
03 Housing conditions
04 Working situation
05 Economic Situation
06 Education, qualifications
07 Communications and contacts
08 Leisure time activities
09 Health information
10 Ideological facts
11 Military facts
12 Police information
13 Facts about law suits
14 Habits

(Note : the classification was developed and the paper presented by Assistant Professor Jon Bing, Oslo University. The Symposium Report contains the full list, as well as a theoretical approach to the sensitivity problem.)

IRELAND

In 1964 the Department of Finance set up a central section to evaluate and authorise proposals by Government departments for the acquisition of computers, to advise and assist departments in the planning and implementation of computer projects and to assist in attaining the maximum degree of co-ordination and co-operation between departments in the utilisation of computers and the optimum use of the equipment. In support of these functions, the department operates a bureau service for various other departments, using time on an existing Civil Service computer and commercial bureaux computers. A new computer, with terminal facilities, to extend and develop this service, is due for delivery in autumn 1972.

As a result of its experience to date and in the context of the rapid expansion of automated data processing planned for the immediate future, the Department has recently re-defined the functions of the central section to emphasize its central planning, promoting and co-ordinating roles. The section has been re-named

"Central Data Processing Services" and will be responsible for planning, development and co-ordination in relation to EDP in the Public Service (including Central and Local Government organisations, and, eventually, some state-sponsored companies), and promoting and developing information systems. It will also promote the use of the central bureau services in so far as is practicable and it is envisaged that over a number of years, large integrated data bases, serving a number of user departments, will be built up and maintained at the central computer installation.

BELGIUM

The Minister for Civil Service has been appointed co-ordinating minister for information processing and instructed to prepare yearly programmes as well as five year plans for automation. There is also to be a general plan, encompassing the five year plan. An inter-agency Information Processing Commission and the General Services Administration assist the Minister for Civil Service. The General Administration Services has competence in civil service regulations and government organisation.

Computer procurement is controlled by the Ministerial Council for Economic and Social Co-ordination. Technical reviews of requests for computer equipment and manufacturers tenders are examined by the General Administration Service. When tenders have been examined, the Minister for Civil Service must propose a distinction among various manufacturers which is decided upon by the Ministerial Committee.

The future direction for central government information processing services in Belgium has been recommended for integration in a unified system. Data acquisition would be placed close to the source. Provincial (regional) data processing centres would handle ADP needs and ensure transmission to the Central Government. At the central level a general and integrated data handling system would be developed and networks of interconnected data processing constructed. All levels of government organisation would participate in this system with the Central Government co-ordinating the demands of users[1].

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[1] Cf. K. Lenk. Automated Information Management in Public Administration, Informatics Studies, N° 4, OECD, Paris, 1973.

AUSTRIA

In 1968 a Co-ordinating Committee for ADP in Austrian Federal Government was established in the Federal Chancellery. Its task was to make recommendations to the Government in all special fields of ADP. The membership of this Committee includes all ministries and some external experts. All ADP projects of the ministries are examined in detail by a subcommittee of the Co-ordinating Committee. This subcommittee is composed of the Federal Chancellery, Ministry of Finance, Court of Audit, and external experts. In addition to reviewing proposed projects, the subcommittee works out a general ADP concept for computers in the Federal Government and communications and information systems in the public administration (including universities).

A total of eleven interministerial working groups specialise in particular aspects of central government computer utilisation. Their recommendations are presented to the subcommittee for consideration. The names and brief description of each working group will give an indication of the areas of examination.

a) Planning - hardware, software, capability, manpower, etc.;
b) Standardisation - of software ;
c) Protection of Privacy - legal aspects ;
d) Protection of Privacy - technological aspects and security ;
e) Personal Number ;
f) Common Problems - Federal Government, Lander, Municipalities, and other institutions ;
g) Common Policy against Computer Software Firms - contracts, recommendations for auditing offers, etc. ;
h) Telecommunications problems ;
i) Standardisation - contacts with national and international institutions ;
j) Manpower Training ;
k) Information Systems - future trends[1].

The Austrian Government instructed the Co-ordinating Committee in January 1971 to ensure that in future the planning of new ADP facilities in the Government be co-ordinated, in order to avoid erratic development. The first report[2] of this Co-ordinating Committee was published in February 1972 and contains a detailed description of present ADP applications in the public sector, including universities. It also contains a detailed plan of new ADP

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1) Information submitted by Austrian Delegate to Computer Utilisation Group, OECD.

2) Elektronische Datenverarbeitung im Bundesbereich, Erhebungsbericht 1971, Bedarfsprognose 1971-1974.

facilities up to 1974, and constitutes the first approach to a medium-term, rolling ADP plan of the Federal Government.

The protection of privacy from computer applications of personal data has not reached a point where specific public action is called for - as data "banks" are just beginning in some possibly sensitive parts of administration. However, the Penal Code requires that public employees keep information collected from citizens secret, violations are punishable. A judicial and constitutional or statutory basis for privacy which would include ADP may be incorporated in a codification of fundamental rights and freedoms which has been under review since 1964.

3. 1. 3 Partial Co-ordination

Some central governments have developed only partial co-ordination of automated information processing. The reasons for this vary from constitutions giving autonomy to cabinet ministers to the lack of a plan for consolidated administrative co-ordination of ADP. In order to be clear on the use of co-ordination in this context, the following may be helpful :

> "In the administrative sense, to co-ordinate means to organise suitable relations among several administrative units, but also, in the field of information processing, to combat excessive compartmentalisation and to establish a balance between the procurement of equipment and the development of applications. Co-ordination also means establishing a consistency among the decisions concerning automation and ensuring that they converge towards the existing objectives"[1].

The objectives of co-ordination are effectiveness and economy.

This section will deal with the United States, Germany and Canada. The negative characteristics of partial co-ordination are easier to define than what is embodied in them. Usually there is no central agency engaged in reviewing of plans for new computer applications, nor post installation evaluation, nor co-ordination of planning for ADP needs in the future. Little central co-ordination exists with lower levels of government, States and municipalities. No central government computer service bureau exists,and attempts to integrate data bases move slowly due to lack of concerted technical and administrative co-operation. Nevertheless, positive characteristics are present, such as research on standards and for co-ordination of ADP equipment acquisition. A number of other facets of planning and policy development are usually present in operating agencies and interdepartmental co-operation is increasing in varying degrees. In Germany the machinery for developing

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1) The Applications of Information Processing in Public Administration, International Institute of Administrative Sciences, XI International Congress of Administrative Sciences, Rome, 6th-11th September, 1971, p. 26.

comprehensive planning is being set up with many policy decisions to be reached in the next two or three years.

UNITED STATES

The United States Government has probably the most highly automated information processing systems in the world. The number of computers purchased more than doubled between 1965 and 1970 and leased computers increased [illegible] per cent in the same period (see Table 7). The procurement, by purchase or lease, of computer equipment and programmes since 1965 has been under direction of the General Services Administration (GSA), the central civilian buying agency for the Government.

The Bureau of the Budget (now renamed Office of Budget and Management, to be referred to as OMB in this report) has overall leadership and co-ordination of ADP activities in the Executive Branch. This general guidance function includes fostering government support for the development and promulgation of voluntary commercial ADP standards. OMB has from time to time prescribed government procedures for ADP activities by issuing circulars and bulletins (regulations) to the heads of executive departments and establishments. This material pertains to the acquisition and operation of computer equipment. The OMB, the principal budgetary review agency, housed in the Executive Office of the President, has necessarily had to delegate some activities to the GSA and National Bureau of Standards (NBS).

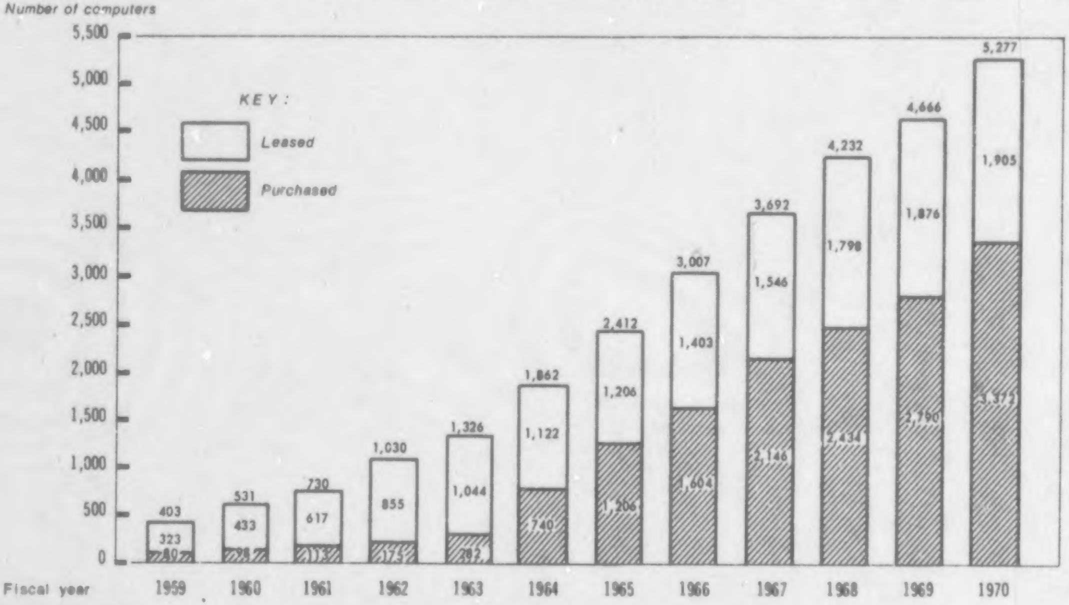
In accordance with the congressional mandate since 1955, the OMB gives policy guidance, GSA controls procurement and the NBS is responsible for standardisation and advisory assistance, these comprise the Federal Government co-ordination plan for ADP systems. There has been little formal change in this arrangement since 1965. No new or more comprehensive plan for co-ordination or direction of computer utilisation has been released by the Government ; it is only Congress which periodically calls for reforms. The OMB sponsored the National Statistical Data Centre idea so strongly opposed in Congress. Since that effort was unsuccessful, most OMB efforts have been directed at improved automation and compatibility of data bases within Federal Departments and agencies looking to the day when authority is forthcoming to integrate some of these systems.

In 1965 Public Law 89-306 (Brooks Act) was enacted giving exclusive authority to the GSA for procuring all ADP equipment for use by Federal Agencies. The law, however, prohibits GSA from exercising responsibility for determining the ADP equipment requirements, selecting types and configurations, or deciding the use to be made or such equipment. The only result of this limited GSA invol-

Table 7

UNITED STATES.

NUMBER OF COMPUTERS PURCHASED AND LEASED STATUS AS OF JUNE 30



Fiscal year	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Percent purchased	19.8	18.5	15.4	17.0	21.3	39.7	50.0	53.3	58.1	57.5	59.8	63.9
Percent leased	80.2	81.5	84.6	83.0	78.7	60.3	50.0	46.7	41.9	42.5	40.2	36.1

The decisions to purchase or lease computers are based on the probable length of time the equipment can be used advantageously and the comparative costs of purchase versus rental for that period. Future programs, projected workload requirements, estimated hours of computer use per month (appropriate to the term of the lease), maintenance costs, cost of money, the relationship of manufacturers' pricing structure for rental and purchase, and the impending improvements in computer technology are considered.

Source: *Inventory of Automatic Data Processing Equipment in the United States Government*, General Services Administration, Fiscal Year 1970, U.S. Government Printing Office, Washington, 1971.

vement is the agency's review of large computer procurements, as negotiations for Annual Federal Supply Schedules develop[1].

The National Bureau of Standards was also authorised in the Brooks Bill to provide agencies with scientific and technical advisory services relating to ADP. Agencies have been given such assistance, both formally and informally, for many years. The General Accounting Office (GAO), has noted, however, that as late as 1969 NBS has issued no specific guidance on peripheral equipment substitutes from manufacturers ; neither had the GSA nor OMB, also charged with issuing related guidelines. There has been progress in adopting mandatory Federal standards and character code standards which will increase compatibility and reduce technical difficulties.

This controversy between procurement of complete systems versus individual components centres on three issues :

- better management and cost reduction ;
- more effective use of all necessary software in ADP systems ; and .
- the use of small, independent manufacturers of components for greater efficiency and tailoring of system requirements.

In 1971 the GAO investigated software product procurement, which the agency estimated to be $ 2 to $ 3 billion a year, for acquisition and in-house development of software[2]. GAO presented evidence of inadequate procurement practices resulting from "limited activity by central management agencies of the Government in providing policy guidance for acquiring and utilising computer software". Another problem is the apparent lack of a complete inventory of computer software products used in federally financed installations. In September 1971, GSA began compiling an inventory of proprietary computer software programmes for use within federal Agencies.

The National Bureau of Standards established a Centre for Computer Sciences and Technology as a result of the new duties under the Brooks Act. The Centre aims to :

> "provide agencies and the Administrator of GSA in the exercise of the authority delegated with scientific and technical advisory services relating to automatic data processing and related systems, and to make appropriate

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[1] Useful background information contained in Study of Acquisition of Peripheral Equipment for Use with Automatic Data Processing Systems, Report by the Comptroller General of the United States, General Accounting Office, Washington D. C., 24th June, 1969, pp. 9-13.

[2] Acquisition and Use of Software Products for ADP Systems in the Federal Government, Report by the Comptroller General, General Accounting Office, Washington, 30th June, 1971, pp. 1-12.

> recommendations to the President relating to the establishment of uniform Federal automatic data processing standards. The Secretary of Commerce is authorised to undertake the necessary research in the sciences and technologies of automatic data processing, computer, and related systems, as may be required"[1].

To accomplish these objectives, the Centre realigned its existing 200 member staff into several areas of responsibility : information processing standards, technical information exchange, computer services, management applications planning, sytems research and development and information processing technology.

A considerable amount of NBS Centre work is the result of requests from Federal agencies. Some typical kinds of assistance offered to agencies by the Centre are as follows :

- help in formulating long and short-range information processing plans ;
- provision of objective evaluation of agency ADP plans ;
- study of the organisation and procedures for management use of ADP ;
- counsel in planning and implementing complex data processing projects ;
- study of information flow requirements for management information ;
- reviews of performance of computer installations, and
- planning and conducting feasibility studies[2].

The Centre worked exhaustively on preparing and planning the implementation of the code for information exchange (Federal Standard Code for Information Interchange) and related media standards which took effect in 1969. It has established a programme for increasing compatibility in data processing activities by recommending standards for equipment, technical and computer languages.

An annual report on the development and maintenance of a standardised information and data processing system for budgetary and fiscal data for use by all Federal agencies is now required by the Secretary of the Treasury and Director of the Office of Management and Budget[3]. In the first report progress was noted in the analysis of the requirements of the Act, in the survey of agency

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1) Public Law 89-306 (Sec. III f), United States Government.

2) NBS Technical News Bulletin, Department of Commerce, Washington, D.C., August, 1967, pp. 153-154.

3) First Annual Report to Congress on the Budgetary and Fiscal Data Processing Systems and Budget Standard Classifications, required by the Legislative Reorganisation Act of 1970 (PL 91-510), Department of the Treasury and the Office of Management and Budget, 1st September, 1971.

automation of budget and fiscal data systems, existing data elements and code standards were analysed and a plan for meeting desired objectives developed. Work is underway to use this system in compiling and preparing the President's Budget based on standard inputs from all agencies.

Another example of closer co-ordination of information processing by the Federal Government can be seen in the plan to reorganise Federal statistical activities. The fragmentation of statistical activities within (not among) the four major data gathering departments of the Government, the Departments of Agriculture, Commerce, Health, Education, and Welfare, and Labour, has long dismayed those users of such information inside and outside of Federal service. Less than satisfactory economic and social statistics, plus a 25 per cent increase in the President's budget for principal statistical programmes and the proliferation of statistical collection activities among 40 different Federal agencies prompted the reorganisation plan. The major principles for the reorganisation are :

i) "Determination of need and broad general specifications for statistical and information programmes would remain decentralised, as at present, with the policy-making and programme offices of the various departments and agencies.

ii) In each department, planning and analytical functions for general purpose statistics (population, unemployment, prices, wages and other economic indicators) should be centralised in an office of data analysis. In addition to planning, analysing, and publishing the general purpose data, this office, within each department, would engage in the construction of analytical statistical measures (such as national income and product accounts, input-output tables, new set of social and demographic accounts, etc.). It would also make projections, build models and undertake other other long-range analysis.

iii) In each department, collection and processing of statistical data would be centralised in a service-oriented data collection and processing centre. All informational requests would funnel through these centres, which would review them and decide how they could best be accomplished. OMB would continue in its role of programme co-ordination and monitoring statistical activities"[1].

The OMB considers this movement to centralise statistical systems desirable but would oppose the creation of a single, centralised statistical agency.

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1) Statistical Reporter, United States Government Printing Office, Washington, D. C. , July 1971, p. 1.

> "We have opposed excessive centralisation because we believe such a system would be inflexible and unresponsive and would heighten legitimate public concern about over-concentration of information in any one agency of the Government. On the one hand we have become increasingly aware of the defects of overproliferation of statistical operations. In considering these problems, we have developed similar, although not identical, solutions (to other countries), retaining the main advantages of a decentralised system while removing principal deficiencies.
>
> "The principal strength of decentralisation is that individual policy-making departments and agencies have responsibility for determining their own data needs and updating their requirements as circumstances change. This feature is retained in our reorganisation plan. The greatest weakness is that there are far too many agencies, something over 40 at the latest count, engaged in the actual collection and tabulation of statistics. Close to two-thirds of all statistical work is still carried out by the five largest agencies with the remaining one-third widely scattered among 30 others"[1].

If President Nixon's reorganisation of Cabinet departments were approved by Congress, one of the new departments to be established would be named Department of Economic Affairs.

> "For the data collection and processing centres in a consolidated Department, we envisage two main and largely separated centres : one for population censuses and house-hold surveys and the other for censuses and surveys of business establishments... A division of this kind is contemplated in order to avoid diminishing economics resulting from a single massive centre, and also because the statistical expertise, methodologies and materials are quite different in these two categories of activities"[2].

Thus the United States Government is moving functionally to draw its statistical programmes closer together.

President Nixon in his 1972 State of the Union Message called for a new project called the New Technology Opportunity Programme. This will be designed to develop ways of applying computers to pollution problems, crime control, consumer protection, better transportation and innovation in education. A study prepared for the President's Office of Science and Technology, submitted recently

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1) Statement by Julius Shiskin, Chief Statistician, OMB, before Joint Economic Committee, 27th October, 1971, reprinted in Statistical Reporter, November 1971, pp. 80-83.

2) Ibid., p. 83.

urges "that a national policy be formulated and implemented to guide the development and control the impacts of computer technology in directions most beneficial to our society"[1]. This report stresses the future impact of computers and communications on society, especially in economic values, goals and priorities, the social issues and institutional, political, legal and demographic areas.

The report calls for the formation of a "nucleus planning and analysis group" in the Science Advisor's Office, for the technological assessment of computers and their impact. One of its functions would be to find solutions to technical and legal problems of security and privacy. Other important areas of study aimed at deciding certain priorities for computer applications are :

- employment needs in ADP ;
- copyright and patent problems ;
- an educational programme to inform the average citizen about the computer ;
- organisational and policy implementation problems ;
- computer based networks.

There is some interest in the issue of privacy protection in the Executive Branch. "Lifting the image of computers from that of an unwelcome intruder" is a challenge issued by the President's Science Advisor, Edward E. David, Jr., for the Government and private sector[2]. Leadership in the privacy question is one way to upgrade public attitudes toward computers, according to David.

> "I dare say that a well designed computer system can be made more nearly private than the manual filing methods used today. The technology and technique for this are in hand or nearly so. Some further innovative effort can provide further advances, but the problem is that system designers and their customers have not seen fit to utilise the available technology to protect people's privacy. The question of efficiency and costs arises here. It may well be true that special hardware will have to be incorporated into computing systems to facilitate the elaborate protective mechanisms which in the end will be required for adequate privacy. The impetus for these developments has been slow in coming, but I believe we will see incentives by government for such developments"[3].

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1) Prepared by MITRE Corporation and reported in Computerworld, 2nd February, 1972, p. 1.
2) Computers and Automation, September, 1971, pp. 12-14.
3) Ibid., p. 13.

Reacting to criticism[1] of the 1970 census plans, the Secretary of Commerce, under whose jurisdiction the census is taken, appointed a Decennial Census Review Committee to examine the purposes, procedures, penalties and general conduct of the 1970 census and make appropriate recommendations. While no significant alterations in decennial census content or administration were suggested, the Panel recommended the creation of an Advisory Committee on Privacy and Confidentiality to assist the Director of the Census "on matters relating to protecting the right of citizens against disclosure of census data for individuals"[2].

The lack of a standard identifier of individuals in the United States has been acknowledged as a serious impediment to the integrating of various sets of automated files. The Social Security Act of 1934 required creation of a social security account number for all persons employed and qualifying for inclusion in the system. This numerical identification system was soon applied to unemployment insurance programmes operated by the States, and in 1943 Executive Order 9397 directed that "the social security account number be used whenever the head of any Federal department, establishment or agency finds it advisable to establish a new system of personal account numbers pertaining to individual persons". The order remains in force and most Federal agencies have followed its prescription, including the Internal Revenue Service, which makes supplying the Social Security Identification Number a mandatory feature of annual tax reporting. Widespread private banking , insurance credit and other uses of this numbering system have resulted in its almost universal application. Broadening of social security coverage and its tie with the tax system have resulted in almost every person born in the United States, as well as resident aliens, being issued such an identification number at an early age.

This social security number identifier of individuals and "potential harmful consequences"[3], is being studied by an Advisory Committee appointed by the Secretary of the Department of Health, Education and Welfare (HEW). The 24 Member groups, whose members include HEW officials and the computer community, will be officially known as the Secretary's Advisory Committee on Automated Personal Data Systems. The Committee's executive director indicated "the body was formed to develop an analysis of any potential, harmful consequences of automated personal data systems"[4].

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1) See "The Census : Invasion of Privacy", Congressional Record, 90th Congress, 1st Session, 10th October, 1967, p. 13169.

2) Report of the Decennial Census Review Commission to the Secretary of Commerce, United States Department of Commerce, Washington, D. C. , July, 1971.

3) Computerworld, 14th June, 1972, p. 1.

4) Ibid.

Together with analysing privacy issues, the Committee will attempt to devise safeguards to protect individuals from any undesirable results of the number usage. It is intended that the Committee will give periodic reports to the HEW Secretary.

The standard identifier issue, becoming a pressing matter, was brought before the Computers and Information Committee of the American National Standards Institute for resolution. The Committee recommended that the social security number should be a technical standard for identifying individuals. Opposing this view was United States Senator Sam J. Ervin, noted civil liberties advocate and chairman of the Senate Subcommittee on Constitutional Rights. The Senator believes that such a decision involves broad social judgements about the desirability of large scale computer record keeping in various settings, the kind of records to be maintained, confidential protection, and whether such a system will have a negative psychological impact on individual citizens[1]. A California Court has already recommended the use of the social security identification number to match welfare reports with unemployment records[2].

There is a growing use of networks evolving in the United States between various Federal agencies and their regional offices and Federal Departments with state and local agencies with the same or similar functions. Horizontal links among a central office and its branches in the field are not a particularly important development, but the developing vertical integration, largely subsidized and directed from the Central Government, carries more significance. The three largest undertakings involving a considerable volume of intelligence files are plans to federalise public assistance[3], register of the unemployed[4], and a law enforcement agency data network[5]. The Law Enforcement Assistance Act authorises the Department of Justice to establish a Criminal Justice Information System. Development of this system has involved considerable controversy over civil liberties issues, jurisdictional questions among different levels of government, and the usage of computer equipment by state and local governments.

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1) Speech of Senator Ervin before American National Standards Institute, reported in EDP Weekly, 7th February, 1972, p. 3.

2) Computerworld, 23rd February, 1972, p. 1.

3) See the President's Proposals for Welfare Reform and Social Security Amendments of 1969, Committee Print, Committee on Ways and Means, United States House of Representatives, 91st Congress, 1st Session, 1969, pp. 55, 63, 66, 79.

4) "The Job Bank and Job Matching Programme" of the Department of Labour.

5) See "The Use of Computers and Related Systems in the United States Law Enforcement", OECD Document and Datamation, 15th June, 1971, pp. 24-41.

United States Congress

Legislation and inquiries by Congress in the past decade have been directed to the management and efficiency of computers in the Central Government, protection of citizens' privacy, and the acquisition of some ADP capability to modernise its own operations. The fragmental structure and cumbersome operational procedures of the Congress weaken any opportunity to launch long range computer use strategy. Despite these handicaps, congressional outputs have established such a policy as a major factor in the preparation of any national plan or initiating significant changes in present practices.

The 92nd Congress (1971-72) has seen less concentration on human values and computer impacts and greater interest in its traditional fiscal role as watchdog over Federal management efficiency and economy in spending. There has been a revival of interest over more effective implementation of the Brooks Act (PL 89-306). Congressman Jack Brooks, author of the statute, said at the opening of hearings to review the Act's implementation.

> "As the world's largest user of computers, we must, in a responsible manner, fulfill our mandate to the taxpayers to manage this costly equipment efficiently and effectively"[1].

The subcommittee headed by Brooks is especially concerned with procurement and use of peripheral supplies and whether present procurement procedures allow Government purchasers sufficient alternatives.

The tangible savings stimulated by the Brooks Act have been estimated, following a GSA report, at $ 1.1 billion since 1965. The lack of central direction of computer application and overall planning were criticised in subcommittee hearings. Chairman Brooks declared :

> "Despite the vital importance of computers to our society, there is no effective policy-making structure in the Federal Government to guide the nation in the optimum exploitation of these techniques"2.

The Joint Economic Committee's Subcommittee on Priorities and Economy in Government conducted hearings along similar lines to Brooks' and came forward with a severe attack on management of automated data processing equipment (ADPE). The Subcommittee found that "there is no complete inventory of Government ADPE, no adequate government-wide management programme for

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1) Reported in Computerworld, 2nd June, 1971, p. 2.
2) Ibid.

the efficient use of ADPE and the existing procurement process of peripheral components excluded healthy competition of small firms"[1]. Testimony revealed that 1.629 ADPE systems were exempt from submitting efficiency reports and being evaluated by GSA because their use is "dependent on the complexity of the environment in which they are employed"[2]. Several strong recommendations followed the Subcommittee's studies.

As a means of improving the procurement and management of government ADPE, the Subcommittee recommended :

i) "A moratorium of further ADPE systems should be considered until it can be determined that the existing ADPE inventory is being efficiently and properly used.

ii) "Total annual cost for all ADPE should be developed and maintained. GSA should better project (a) cost figures for hardware and software, (b) projections of acquisition to improve utilisation and prevent over-buying, and (c) ensure that ADPE management information system records are kept current for use by Federal agencies and Congress.

iii) "NBS efforts at standardisation should be accelerated.

iv) "GAO should review total annual cost figures and make determinations on the extent to which government owned and leased ADPE is economical"[3].

Congress itself is seeking to acquire computer capabilities. Investigations on bringing computer service to the legislative branch have taken the form of :

a) Investigation and commissioning of studies to see how Committees of Congress and individual Members can best use ADP[3].

b) Hearings and study by the House Committee on Science and Astronautics on improving Technical Information for Congress[4].

c) Considering proposals to install a computer system in the Legislative Reference Service of the Library of Congress which provides research services to Congress.

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1) Ibid.

2) Special Report of the Subcommittee on Electrical and Mechanical Office Equipment of the Committee on House Administration on Automatic Data Processing for the House of Representatives, United States House of Representatives, 91st Congress, 2nd Session, Washington, D. C., December 1970.

3) Ibid.

4) Technical Information for Congress, Report to the Subcommittee on Science, Research and Development of the Committee on Science and Astronautics, United States House of Representatives, 91st Congress, 1st Session, Washington, D. C., 25th April, 1969.

When long-established traditions and patterns of action by congressional committees become better reconciled to the need for modern technology, and Executive Branch fears of a Congress run wild with an important new tool for inspection are allayed, the Congress will command its own ADPE.

The quest for new laws to protect rights of personal privacy from certain computer applications entered its seventh year in 1972. The plan for the proposed Federal Statistical Data Centre has been put aside. The census taken, leading congressional spokesmen on this issue could look to some gains and foresee others in the near future.

A strongly worded citizen inspection and control of disclosure of personal information held by Federal agencies was re-introduced and House hearings held in mid-1972[1]. The Citizen Privacy Act would prohibit a government agency from disclosing the files of anyone without the consent of the individual covered by the records. It is stipulated that government agencies would be required to disclose the existence of files to any individual regarding such a report. A right to inspect their files and to add supplementary information, if needed, is also contained in the Measure. Some 135 Congressmen have sponsored the bill. Critics of the legislation say that the job of notifying each individual covered "would be a logistic's nightmare"[2]. Since the bill covers only information supplied to the government by other than the person covered in the file, a number of large data bases (such as IRS) would be excluded.

The Fair Credit Reporting Act was in operation, the attack on Army data bases for civilian surveillance curtailed, a better perception of potential dangers of data misuses articulated by the Secretary of the Department of Health, Education and Welfare, the President's Science Advisor and some officials of the Department of Justice. The continuing challenge has been to draft a bill which, once adopted, would cure the evils worrying some legislators. Controls on collectable information, integration of data bases and release of personal records, have been urged ; establishment of an independent authority to licence or otherwise oversee public and private data bases called for. This debate and search for solutions is likely to continue for many years.

State and local government

States and cities are receiving advice, encouragement and Federal Funds to assist in the conversion of manual data to automated systems coherently organised for maximum benefit. As certain state activities become increasingly federalised, so too does the introduction of ADP and guidance on its applications. The public assistance and unemployment service function of states are good

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1) Computerworld, 28th June, 1972, pp. 1-2.
2) Ibid.

examples. Strong co-ordination and direction of information systems development may take place without operational control being withdrawn from local and state officials. In the case of law enforcement, the project SEARCH is to become a nationwide network of information interchange of criminal records and other data. Direct grants to improve functional relationships among Federal and State-local agencies can be seen in the fields of education and health. The Department of Housing and Urban Development (HUD) has embarked on a major project with its municipal information processing on a wide scale.

Each of these separate courses of action brings with it the recommendation and sometimes requirement that Federal standardisation policies, as developed by the NBS Centre should be following in system design. Federal officials are also keen to insist on improved information flows among the various levels of government. The principles outlined in the study "The Dynamics of Information Flow" are to be increasingly accepted and implemented as Federal involvement in State and local ADP work grows[1].

GERMANY

In the Federal Government work is proceeding on the automation of major information systems for functional agencies, e. g. statistical and criminal, and a general information system for administrative purposes is planned. All ministries are responsible for the organisation of ADP in the Federal Government within their own area of jurisdiction. The Ministry of the Interior has a general co-ordination and advisory function and is also in charge of the overall planning of ADP activities in the Federal Administration. The Federal Constitution, Art. 65, states that each ministry is independent in carrying out its duties. This reduces the power of the Minister of the Interior in terms of requiring certain ADP objectives to be carried out. There is an Interdepartmental Committee for the Co-ordination of ADP applications in Federal Administration. The German Federated States (Länder) are comparatively independent of the Federal Government. A Joint Committee of the Federal, Länder and local authorities ensures co-operation between these three levels.

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1) The Dynamics of Information Flow, Recommendations to improve the flow of information within and among Federal, State and Local Governments, A Report by the Intergovernmental Task Force on Information Systems, April 1968. See also Report by United States Section of International Union of Local Authorities, Conference on Computers in Local Government, 8th to 11th November, 1970, Washington, D. C.

At the ministry level, the Federal Minister of Economics and Finance sponsors current development activities of the ADP industry (hardware and software). The Minister of Education and Science supports research and long-term development in ADP techniques. The Society for Mathematics and DP advises the Government on problems of informatics and systems analysis and is also carrying out software developments. All departments are responsible for planning and operation of computer systems including procurement, but the Minister of Economics and Finance is usually giving his consent only after the co-ordinating and advisory board of the Ministry of Interior is supporting the project.

The Minister of Interior directs the Co-ordinating and Advisory Board for ADP in Federal Administration which has four main operating sections.

One of these sections is to act as co-ordinator of the Interdepartmental Committee on ADP applications in Federal Administration, serving as Chairman and Secretariat. Co-operation with Länder and local authorities as well as international organisations is also the duty of this section. Efficiency dimensions including principles for procurement and guidelines for cost-benefit control come within its responsibility.

A second section gives technical advice and assistance to all departments on all aspects of planning, development and operation of computer systems. Another section is in charge of developing the population register and numbering system, co-ordinating all registers containing personal data and establishing training programmes for ADP personnel. The Society for Mathematics and DP runs courses for the training of Federal ADP personnel. Short ADP courses for senior staffs are also held at the Federal Academy for Public Administration. The fourth section is involved in planning and co-ordination of data bases and the protection of privacy.

Plans are being made for an information system for Parliament, Government and Administration. Co-ordination is given individual data bases in Federal Administration for better performance. Co-operation in planning of supra-national and international information systems is conducted here. A bill and subsequent regulations for the protection of privacy is being formulated in this office. It should be noted that all ADP regulations, principles and guidelines proposed by the Co-ordinating and Advisory Board have to be agreed upon by the Interdepartmental Committee or, when of major importance, by the Cabinet.

A Cabinet Commission for the Reform of Federal Government and Administration has appointed a Working Group for Information Bank Systems in the Federal Republic of Germany. This interministerial group has prepared a report considering a master network of data bases, including the Federal Government, Länder cities, principal corporations and the universities. This network would finally integrate thousands of public and private entities and public and private general information exchanges would support the users.

The report[1] opposes the building of large general purpose data bases, but favours comprehensive networks. Participant-users would determine who may have access to their data bases and what information within it is for re-use at all. A widely representative Board of Directors would control the service network and cost operations would be borne by users. The plan has met criticism for its traditional management approach, for not taking a problem-solving attitude where administrative structures and functions should be altered to meet changing public needs. A computer-communication network might well encourage reforms in government at all levels rather than being a reinforcing mechanism.

There are some statutes and principles of law to protect individuals against the violation of personal privacy. The German Penal Code deals for example with wiretapping, tampering with the mails, professional ethics, and for branches of public administration in which personal or professional data on citizens are collected and processed, there are prohibitions against disclosing information, and regulations on the obligatory nature of secrecy[2]. In 1969 a provision was added for mechanised information. Fraudulent interference with technical equipment, such as recording of data, is a punishable offence.

Special laws have been enacted relating to different administrative fields. These laws stipulate that any official or private person whose services have been employed by the Administration and who is found guilty of a breach of the obligation to maintain secrecy shall be punished by a fine or imprisonment. The Statistical Act contains guarantees ensuring that administrative authorities will observe the principle of secrecy with regard to various statistical data. The Fiscal Code contains the regulations for inviolable secrecy in tax matters.

The Federal Data Protection Act to be considered in Parliament during 1972 will be a general statement of principles and practices considered necessary to maintain the confidentiality and integrity of personal records. If adopted it will immediately apply to all ministries, departments and other Federal agencies. The Ministry of the Interior will follow the legal principles by a set of regulations to be implemented at Federal level, by States executing the law and private holders of personal data. The law will pertain to all forms of written and computer information on personal characteristics. The Länder have shown an interest in merging efforts in the creation of data protection legislation, so that an effective, universal policy can be achieved in Germany.

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1) Das Informationsbankensystem, Vorschlag für die Planung und den Aufbau eines allgemeinen arbeitsteiligen Informationsbankensystems für die Bundesrepublik Deutschland, Bonn, May, 1971, to be released in 1972.

2) German Reply to Privacy Questionnaire, OECD Document.

A personal identity number has been proposed for assignment to all inhabitants of the country (German and aliens) and to German nationals abroad, to be used as a linkage for exchange of data between different registers. The present population registration system requires all persons to register with local authorities or police stations and report every change of address, and give certain other information. The number itself will consist of 12 digits ; day of birth-2, month of birth-2, year of birth-2, sex and century of birth-1, count number-4, check digit-1. The count number differentiates all people born on the same day. The check digit is computed according to a Modul 11 procedure[1].

Introduction of the number will be through Länder and municipalities where it will be entered on population registers and personal identity cards. The use of the uniform identity number will be obligatory for the population register and will replace other existing numbers where that is necessary and practical in other fields of administration. It will be permissable for private business and industry to use the identification number. The full application of this new linkage system has not been decided but widespread use in administration of programmes such as pensions, social welfare, and employment is contemplated.

Länder and local governments

The Länder were among the first governments in OECD Member countries to consider adopting a data protection law. The Land Hesse enacted such a measure in 1970[2] and, more recently, the Federal Länder Rhineland-Palatinate and North-Rhineland-Westphalia have been considering similar draft laws in their respective parliaments. Two other Länder, Bavaria and Baden-Wurttemberg have introduced legislation providing rules for the protection of personal data in connection with the establishment of ADP centres. Further enactments may be held in abeyance until the Federal Data Protection Act is published and considered by the Parliament so that the Länder may act in a consistent manner.

The authority of the Länder is considerable, because they manage not only their own tasks but execute the Federal Law as their own affairs[3]. The Federal role constitutionally is limited to such

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1) Information contained in German (Ministry of the Interior) response to a questionnaire on population and numbering systems, circulated by the Intergovernmental Council for ADP/ICA.

2) Refer to G. B. F. Niblett, Digital Information and the Privacy Problem, Informatics Studies, N° 2, OECD, Paris, 1971.

3) Excellent detailed description of the computer activities for the Länder may be found in the report, "Information Technology and Urban Management", by Paul Kenneth and Claude Maestre, OECD Documents, 1972.

areas as foreign affairs, defence, federal finance, post office, railroads, and a few others. It is generally acknowledged that the German states have widely adopted sophisticated ADP systems for administrative tasks. Federal linkage with these operations would thus cause new relationships between levels and contribute to a more complete application in the public sector.

CANADA

The pre-1955 history of computer applications in Canada is not unlike that in several other countries. Each department obtained its own computer and developed its own standards and utilisation practices. There was no central body calling for uniform usage on an interdepartmental level ; in fact, over 300 programmes existed for the budget area alone. Following Treasury Board action in 1955, an Interdepartmental Committee on Electronic Computers was set up to "co-ordinate the selection and training of personnel, give advice to the Treasury Board on proposals for installing computers, advise departments on applications of computers, to eliminate duplication and overlap in departmental expenditures and training and programming courses and seek out areas for computer application"[1].

This Committee had limited success, according to G. E. Henderson, Director General, Data Processing Branch, Department of Supply and Services, because no comprehensive plans and policies were developed, nor was proper attention given to system integration, multiple use of data, or provision of central computer services on a much larger scale[2]. The result was a new directive by the Treasury Board in 1965 delegating large measures of authority to operating departments to approve contracts for ADP equipment and service. Annual reports by the departments were to allow evaluation performance and facilitate co-ordination of ADP activities throughout the Public Service.

The review of these reports proved inadequate so the Treasury Board established a computer service bureau to provide various computer services to Government departments. It was recognised that a greater effort was required to meet the need for such advisory services and co-operation between departments

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1) "The Development and Direction of DP in the Canadian Public Service", Lecture to Latin American Conference. IAG Journal, Vol. 4, N° 3, 1971, p. 269.

2) Ibid.

and intergovernmental units so that when the Government formed a Department of Supply and Services, computer co-ordination functions were transferred there. The Data Processing Branch of the Department expanded former activities to work on the following :

a) Improve standards and practices for all departments ;
b) Assist in developing personnel training ;
c) Promote and co-ordinate plans to increase compatibility of ADP equipment ;
d) Assess technical developments and impact on Government planning ;
e) Provide guidance to agencies, and
f) Provide concepts of integration, multiple use of data and use of central computing services.

The scope and volume of computers in the Canadian Central Government indicates the rapidly growing impact (15 per cent annually) of this technology on administrative services. Table 8 also shows the number of EDP personnel to be 5,000 in 1971-72, and direct EDP costs $ 81 million. Growth predictions through 1976 illustrate why an overall master plan has become of increasing importance.

There are still a number of issues to be resolved for the full development and implementation of an ADP policy in Canada. Three studies have been initiated recently :

a) The EDP Policy Project was sponsored by the Treasury Board to look into integration of computer systems and methods of co-ordination;
b) A computer communications task force is at work on telecommunications data processing for Canada ;
c) The Departments of Commerce and Justice have initiated a study on computers and privacy, including both public and private data bases.

Results of the EDP Policy Study were released in late 1971 and the two other task force reports are due in 1972.

The Treasury Board assigned the EDP Policy Project to the Administrative Policy Branch. The study was initiated "because of concern in the Treasury Board about the rapid growth of expenditures on electronic data processing within the departments and agencies of the Government and because of uncertainty about the effectiveness and efficiency with which computers were being employed[1]". Its objectives were to reveiw the current status of EDP and the present Government policies on the subject, consider

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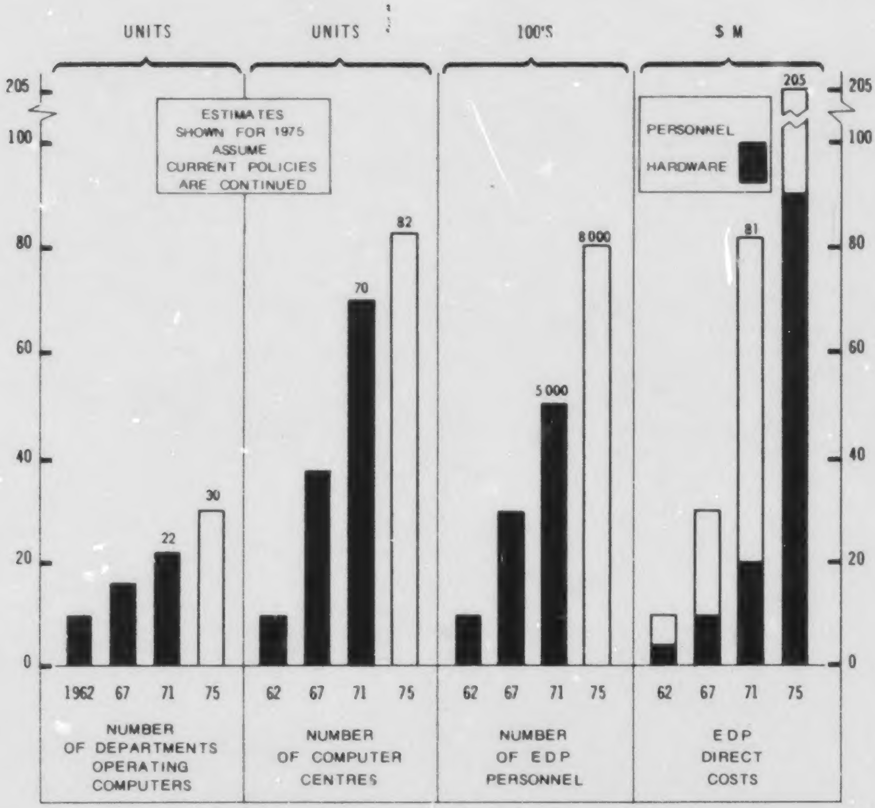
1) Report on Electronic Data Processing in the Federal Government of Canada, EDP Policy Project, Administrative Policy Branch, Treasury Board Secretariat, 30th November, 1971, page i.

Table 8

CANADA
GROWTH OF GOVERNMENT EDP ACTIVITIES



Source: Report on Electronic Data Processing in the Federal Government of Canada, EDP Policy Project, Administrative Policy Branch, Treasury Board Secretariat, 30th November, 1971, p. 4.

the future growth of EDP activities and to recommend new policies for the future which would ensure the fullest and most effective use of EDP (for each agency and the government as a whole).

A new ADP strategy was recommended with its principal motive "to create an environment in which an optimum contribution of EDP to the total process of government will be possible"[1]. The project team issued this proposed statement to characterise EDP use in the Central Government :

> "EDP is a prime resource in the development and operation of information systems designed to serve government in total in support of departmental programmes and to enable departments to fulfil their roles efficiently and effectively. Computer facilities will be organised in the form of Departmental Centres, Service-Wide Application Centres and Functional Centres established to meet the needs of all departments and agencies in accordance with guidelines established by the Treasury Board"[2].

This "environment" need can be achieved, the report contends, by re-structuring Government EDP activities by establishing three types of EDP Centres :

a) "Departmental Centres - EDP installations located in a department and used primarily to provide services for dedicated systems in support of some unique departmental programmes.
b) Service-wide Application Centres - centres of EDP expertise in some specialised aspect of computing created to serve identifiable government-wide processing systems in support of programmes in all departments and agencies.
c) Functional Centres - EDP facilities created to serve the EDP needs of major programmes of a number of specified departments which have related requirements for information and expertise".

The long-range strategy of the Government has much to do with restructuring administration or functions regarding EDP. To develop this strategy and yet carry out day-to-day EDP duties effectively several additional steps are recommended.

Further recommendations for the fulfilment of the policy objectives while centering around the three types of computing centres, are :

1. The Treasury Board Secretariat should proceed with development of a master plan for EDP in government.

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1) Ibid.
2) Ibid., p. 7.

Thus no new in-house computer centres should be approved in the Government unless unusual requirements so warrant ;

2. An Information Systems Division should be created within the Administrative Policy Branch of the Treasury Board to develop and circulate guidelines for EDP applications and procedures and operations and generally monitor government EDP ;
3. The Department of Supply and Services should complete its programme for developing efficient and effective procurement services for all departments and agencies ;
4. Consultations among Cabinet Departments on ADP and national objectives should continue ;
5. The present Computer Service Bureau would be reconstructed as the nucleus of a Functional Centre ;
6. Treasury Board approval would be required for all department and agency EDP plans on projects, equipment and personnel ;
7. Increased attention would be paid to identifying costs of developing and operating EDP projects. Full costing of systems should be introduced.

The aim of these recommendations is a cutback in EDP expenditures.

With controlled growth of EDP activities bringing order to every major phase of planning, procurement and operation, several results are expected. These are specified in Table 9.

Table 9

IMPACT OF PROPOSED POLICY IN 1975-76

	Present trend, projection with no change	Expected trend with proposed policy
Number of Departments Operating Computers	30	15
Number of Departmental Computing Centres	80	45
Total Number of EDP Personnel	7,900	7,400
Direct Cost of EDP ($ millions)	205	175

Source : Report on Electronic Data Processing in the Federal Government of Canada, EDP Policy Project, Administrative Policy Branch, Treasury Board Secretariat, 30th November, 1971, p. 11.

If accepted and acted upon, this EDP Project Report may well have a major impact on computer activities in the Canadian Government. Its scope is comprehensive, almost open-ended, to accommodate future technological developments and government needs. A number of administrative changes are suggested and strong central direction is recommended. These potential developments, when coupled with strengthening of computer-telecommunications policy and possible formal action on computers and privacy concerns, indicate an ambitious programme for the Canadian Government.

A potentially important, related report on Canada's Social Insurance Number has been submitted to the Intergovernmental Council for ADP by the Data Processing Branch. Most of the working population is required to have a Social Insurance Number (SIN), as an identifier of contributers to unemployment insurance. The SIN actually has a wider application, since anyone required to file an income tax return or the Canada Pension Plan must be a holder of this number. A birth, sex, mother's maiden name and Social Insurance Number of all persons possessing one. No full population register incorporating current addresses or other details for the whole population exists in Canada[1].

The present design system is based on two criteria :

a) to have an account number system in which only the minimun information required to identify individuals is maintained, so that people's privacy is not infringed, and,
b) to have a central administration account number system which could be used in several social welfare areas, thus reducing the costs and problems of maintaining separate accounting number systems for each[2].

Distribution of SIN information is limited to the three participating agencies and others only upon approval of the Cabinet, but its availability is said to be limited.

The Government is not developing any new identity number system but considerable expansion in use of the SIN is expected. These new uses include the Government payroll, for payments in connection with the Family Income Security Plan, and three to five Provinces intend to use SIN in their medicare plans. The Province of Ontario has an interest in having all its government records, including driving licences, under one number. Several provinces have indicated they would like people to be issued with a SIN at birth.

The Federal Government is interested in universal registration insofar as it might provide useful statistical information for Statistics Canada, but resists the extension of the SIN system to the

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1) Ibid.
2) Ibid.

entire Canadian population for fear of misuse[1]. Governement officials are cautious about using the SIN system for control or police purposes, fearing public reaction.

There has been activity in the privacy protection field by both Parliament and private groups. In 1969 a bill entitled "The Data Surveillance Act" was drawn up to :

> "regulate and control the dissemination of data from computers that record and store personal information relating to such persons by preventing indiscriminate access to such information. Provision is made to check the accuracy of the data recorded and to require the expunging of that which is incorrect, unfair or out of date. Registration of all such computer installations is required and penalties are provided for any operator of such an installation who contravenes the provisions of the Act"[2].

This measure was introduced into the Ontario legislature, but was not enacted.

A national conference on "Computers ; Privacy and Freedom of Information" was held at Queens University in May 1970. The 150 delegates, from government, industry and universities, concluded that controls are needed to avoid potential abuses of the large information systems predicted in the future. As the opinions converged during the three days of discussion, a system of licensing data banks was thought necessary. The delegates recommended :

- Legislation to provide for the right of privacy and the right to freedom of information ;
- Criminal penalties for breaches of legislation : special, general and, where necessary, punitive damages for abuses of privacy ;
- An independent commission to investigate specific complaints against operators of computer data banks or other information ;
- Comprehensive licensing of data banks, including different levels of licences for information of varying sensitivity ;
- A public fund to pay for individual losses in cases where there has been damage but where legal recourse is impossible ;
- Bonding of personnel working with data files ; and
- Legal guarantees that an individual may see and correct his own file at any time ; provisions to make individuals aware that files on them exist[3].

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1) Ibid.

2) Bill 182, 2nd Session, 28th Legislature, Toronto, Ontario.

3) Computers and Automation, August 1970, p. 10.

The Ontario Law Reform Commission of 1968, issued a report on Protection of Privacy in Ontario in which the creation of a Royal Commission or specially constituted task force to give full investigation of the problem of protection of privacy was recommended. Controls over government acquisition, use and disclosure of personal information were thought necessary in the view of Professor E.F. Ryan, Faculty of Law, University of Western Ontario, who prepared the preliminary study for the Commission.

The various proposals advanced by private groups and parliamentarians are to be reviewed by the Department of Justice and the Department of Commerce in their joint study on privacy.

SWITZERLAND

Although Switzerland belongs to the countries with the highest computer density, there does not exist a coherent computer policy of the Federal Government, which could be compared with the "plan calcul" in France or similar programmes in Germany. Several factors are responsible for this situation :

- Switzerland is a federal state, consisting of 25 cantons. Because of this political structure in which many administrative tasks are dealt with solely by the Cantons there are fewer mass data handling problems and centralized solutions are not easily established.
- There does not exist an important computer industry. The country is too small to build up such an industrial activity which could become commercially viable.
- Because of the existence of a highly sophisticated economy, Switzerland is considered to be an interesting market for foreign computer manufacturers. The major companies in this field compete therefore in offering good services to the official and private users of computing equipment.
- Although Switzerland, and in particular the Federal Institute of Technology in Zürich, participated in some of the pioneering projects on "software", its potential of research in this domain is too small to carry on a large self-consistent programme.

The need for a certain amount of co-ordination and guidance is felt however increasingly as computer technology develops and offers even larger possibilities of integrated data processing facilities and networks. Within the Federal Administration, co-ordination of ADP-activities has been well established since 1960 when the Co-ordination Agency for Automation was created. This body has to guide the development of ADP within the Federal Administration, to approve procurements (hardware and software), to review projects for new applications and supervise the activities of the computing centres of the Federal Administration. Co-ordination within and between the Cantons and with the Federal Administration is mostly in the beginning stages. In some projects, federal and cantonal authorities are working together. The federal government supports also the computing centres of the universities on the basis of the law about financial aid to the universities. The concept guiding its decisions to finance investments in such centres is to increase co-operation and links between these establishments in veiw of developing eventually a university computing network.

In a recent survey of urgent needs for research efforts, the Swiss Science Council identified a number of weaknesses in the sciences and technologies relevant to the application of computers in Switzerland. As a consequence, it is proposing special measures to develop the computer sciences as a first priority. The federal government has yet to adopt these recommendations which may lead to a more active role of the central authorities in computer policies.

An essential part in any computer policy of the federal government will be played by well developed international co-operation. In this respect, the active participation of Switzerland in the COST projects in the field of informatics (data network and programme library so far) is considered to be important and the central authorities have taken the necessary measures to assure appropriate contributions.

The different initiatives described here show that an increasing number of elements are created which may - at a later stage - become part of a general, integrated federal computer policy.

3.2 LEGISLATIVE ATTENTION TO COMPUTER TECHNOLOGY AND ITS IMPACT

The wide application of computers in central governments has required the support of the legislatures from the earliest stages of acquisition. While parliamentarians personal experiences or backgrounds are not usually known for their technical expertise, there has been a willingness to learn about the benefits of ADP and the more refined harnessing of computers to management decision-making. The appropriation of monies for computer procurement was prompted initially by motives of economy since the automating of records means a reduction in the number of clerks in government offices. Later, parliaments became concerned with the structure of this new technology, its application and supervision. In some countries, notably the United States and the United Kingdom, transformation of personal records into mechanised form drew legislators' attention to possible implications for the "human rights" of the citizen and his democratic society.

These earlier involvements of parliaments in the 1950s and 1960s are continuing with greater depth and refinements to meet new implications for government structure, services and public interest in overseeing data bases in the public and private sectors. While the proliferation of examples from the United States Congress included in this section would appear to overshadow those of other countries, this is not necessarily the case. The parliamentary system, unlike the separate, co-equal legislative branch in the United States, tends to allow the "Government" to internalise many issues and arrive at policy before there are members' bills or elaborate debates. In the United Kingdom, however, parliamentary debate began as early as 1967 and continues with neither Parliament nor the Government arriving at a solution to human value issues. The fact that ten or more OECD Member countries[1] have Government sponsored bodies studying aspects of ADP application, privacy or administrative control of computer operations is a clear indication of a wide international belief that policies are desired. In so doing, however, this has reduced potential parliamentary action pending adoption of a government plan. Three more thrusts are considered by parliamentarians to need attention in several countries : technological improvements in computer usage, resolution of data security, confidentiality and individual privacy concerns, and administrative restructuring or intergovernmental functional adjustments which may be advisable as a result of adopting ADP.

Technological improvements

The potential benefits of computers to governments has been generally recognised, from defence and space needs to health care and automobile registration systems. This has spurred some parliaments on to call for more research and development by their governments in various areas and to see that once highly sophisticated ADP systems are available, they can be installed and operated with maximum effectiveness. There are several specific categories of parliamentary involvement in the technological development of computers for government service.

Support for the domestic computer industry. Some governments which have a domestic computer industry largely entrust its growth to officers within ministries of Science, Trade and Industry for technical assistance, research subsidies and sales promotion within the country. This is true of Germany, France, the Netherlands and the United Kingdom. Recently, however, the Parliament of the United Kingdom launched computer hearings with these terms of reference :

> "The prospects for the United Kingdom computer industry in the 1970s, including the possibilities of international collaboration and the functions of Government in this field, as policy maker and user"[2].

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1) Canada, Denmark, Finland, France, Germany, Netherlands, Norway, Sweden, Switzerland, United Kingdom.

2) Op. cit., United Kingdom, Select Committee Report, A-3.

Testimony presented led the committee to propose greater support for ICL and stimulation of a larger domestic software support industry in the United Kingdom. It was stated that in all countries in which a domestic computer industry has developed, including the United States, central government financial and technical assistance has been allocated to stimulate the growth and sophistication of computers. The probe is largely directed at redefining and assessing the present role of the United Kingdom and at whether it satisfied the objectives of some parliamentarians.

Co-ordinated procurement. The country profile presented in this chapter illustrates the degree to which one or more central government agency is responsible for evaluation and procurement of ADP equipment. The law controlling procurement management and use of ADP equipment precludes the complete management and control of ADP resources by a single central agency. However, the three foregoing agencies do exercise certain control and guidance. The most rigorous statements of dissatisfaction with the system adopted in the United States, come from Congress. A 1971 review of the Brooks Act after six years of operation led a Joint Economic Committee sub-group to report :

> "A complete inventory of government ADPE costs, adequate accounting of government ADPE resources furnished to commercial contractors, or an effective management system for government ADPE resources still does not exist"[1].

Procurement practices have inevitably become the focus in many countries of differing views on how to support a domestic computer industry, generate greater government efficiency and bring about a re-organisation of administrative structure.

Central service bureaux. The legislative process has been completed for many countries adopting the larger computer service bureaux for ADP such as Finland, Denmark and Norway, but the eventual role of such bureaux in the Netherlands and the United Kingdom may receive further attention. The service bureau is unavoidably involved in the resolution of policy issues regarding the functional role of data-holding ministries and the decision-making role of some new government-wide computer co-ordination authority.

Standards. The development of technical standards seems to concern parliamentarians only to the extent of creating immediate financial economics, progress for the national computer industry, or in linking up bodies of data to facilitate improved information for decision-making. Most governments assign these responsibilities to scientific and technical research centres within or on contract to the central government. Technical standards would seem to have no direct interest but in the next few years as parliaments automate their work - and computer systems are only as good as their scope of applications - standards are likely to become a lively issue.

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[1] Op. cit., Joint Economic Committee Report, Economy in Government, p. 1.

Technology assessment. For several years the United States Congress has expressed concern that it lacks technical expertise by which to judge the many scientific and technical proposals put forth by the Government. Such a knowledge gap exists not only at the stage of initial approval of such activities, but also in evaluating or assessing their merits some years after execution. Support by specialists to analyse and interpret testimony is but a part of the answer, an in-house solution perhaps, to cope with technical issues[1]. Post-facto challenge might be met, according to a number of Congressmen, by an Office of Technology Assessment.

Congress is one of the few parliamentary bodies to have direct supervision of operating agencies, in particular the Government Printing Office and General Accounting Office (auditor of all public accounts). Thus it is not unusual that this new office should be another of its arms. In the declaration of purpose in the bill it is stated : "the growth in scale and extent of technological application is a crucial element in such problems of increasing population, rapid consumption of natural resources, and deterioration of human environment, and either is or can be a pivotal influence with respect to both their cause and to their solution[2]".

Critics of a technology assessment office responsible to Congress have been many, principally on the issue of whether the legislative branch rather than the "Government" should be the repository for a fully developed technical review agency. It is recommended instead that a totally independent office or one perhaps within the Office of Science and Technology or Office of Budget and Management - both arms of the Executive Office of the President - be established. The proposal was defeated in the House in 1970 but has been reviewed in the Senate, where interest remains high (and it is felt that such legislation would be looked upon favourably). A new bill would create an independent commission to evaluate and assess developments in communications and technology. The requirement of congressional accountability has been dropped, and the chances in the United States of having such an evaluation agency approved have thus been enhanced.

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1) A thorough study of this problem and some solutions can be found in Technical Information for Congress, A Report to the Sub-Committee on Science, Research and Development, Committee of Science and Astronautics, United States House of Representatives April 1969, Government Printing Office, Washington, D. C.

2) Technology Assessment - 1970, Hearings before Sub-Committee on Science Research and Development, Committee on Science and Austronautics, United States House of Representatives, on H. R. 10746, May-June, 1970, Government Printing Office, Washington, D. C. , Volumes I and II.

Human values

By far the most noteworthy consideration given by Parliaments to the advent of computers has been an expression of fear over erosion of human values. Their hearings, debates and legislation are all based on philosophical beliefs which might be summed up as "the right to be left alone", and "a man's home is his castle". The modus operandi for privacy protection has been as difficult to enact as the concept of "privilege of personality", as a value to be protected, has been to define. Naturally, notions of what privacy constitutes among OECD countries vary quite widely ; nonetheless most governments and their parliaments acknowledge that this "right" does exist and that protection of "individuality" is neither clearly defined, nor guaranteed in court precedents[1]. Thus legislators have sought to bridge this gap by enacting statutes covering several types of infringements on personality, surveillance techniques, including those of computer data bases.

In the United States, Congressmen have been investigating the automation of public and private data bases for eight years. General concern has been on rules for collection of personal data, re-use of data by several departments or agencies, and integration of files into large storehouses such as a national data centre. Other countries have taken up these issues but added the personal identification number and the establishment of a regulatory agency to set standards of operation for all data bases. This legislative concern over implications of computers for personal liberty has prompted several governments to institute studies with the objective of proposing new legislation.

Accuracy, confidentiality and security

Parliamentarians have frequently inquired of Cabinet Ministers whether personal information, when computerised is maintained at its same level of accuracy. The mental gap between the filing cabinet concept of data holdings and a computer memory is considerable for the public and their elected legislators. Examples in the press have not reassured the public that the personal reports submitted to the tax office or social insurance fund are indeed transformed into electronic data bits with the same integrity as that with which the citizen submitted them, or as that of a reviewing officer handling them manually. Linked with the issue of management of personal files (manual or automated) are questions of the proper limits of government data collection on citizens.

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1) An excellent report on the subject was prepared for the Nordic Conference on Privacy organised by the International Committee of Jurists, held in Stockholm, May 1967, Right of Privacy and Rights of Personality, A comparative Study, by Stig Stromholm, P.A. Nordstet and Soners Forlag, Stockholm, 1967.

The notion is widely held in America that the more complete (extensive) the information base on a particular individual - the quantitative dimension - the better able the Government will be to prescribe solutions to his problems - a qualitative dimension. This, plus rapidly increasing involvement of the Federal Government in social and economic affairs, has led to a burgeoning of questionnaires and reports requiring action on the part of the public. Controls over data acquisition were advocated largely to stem undue intrusiveness, but partly too to indicate a disapproval of what some saw as Government "paternalism". One Senate-House sponsored bill would have restricted mandatory Federal questionnaires to those enumerated in the Constitution (the census, income tax forms and very few others) and voluntary questionnaires to those specifically called for in statutes. It was said that the effect of this measure would be to put restraints on profligate bureaucracy and university-contracted research projects which issue a dearth of questionnaires annually[1]. The measure was not adopted.

The Senate Sub-committee on Constitutional Rights conducted hearings on a related aspect of information collection : the effect of government data bases on constitutional rights, particularly the right to free speech and association[2]. The main focuses of the hearings were the Departments of the Army and Defense surveillance of "dissidents" and subversives which involved the establishment of intelligence data bases merging many types of information. The covert nature of these and other data bases operated by the Federal Government were criticised by many Senators. Legislative controls over creation and operation of Federal data bases were recommended but no formal proposal advanced.

Decennial census

While the co-operation of the general public in the recent decennial census was high (1970 - United States, 1971 - United Kingdom, Netherlands and other countries), a spirited minority attacked the content, penalties, computerisation and applications of census information. A three-year congressional debate involving more than 150 Members of the House aroused considerable interest

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1) Privacy, the Census and Federal Questionnaires, Hearings before the Sub-committee on Constitutional Rights, of the Committee on the Judiciary, United States Senate, on S-1791, to secure personal privacy and to protect the constitutional rights of individuals to ignore unwarranted requests for personal information, 91st Congress, 1st Session, 1969, Washington.

2) Federal Data Banks, Computers and the Bill of Rights, Hearings before the Sub-committee on Constitutional Rights, Committee on the Judiciary, United States Senate, 92nd Congress, 1st Session, 1971, Washington.

and some action in the United States. Congressman Jackson E. Betts, leader of the census reform campaign, introduced legislation reducing the number of mandatory questions to seven, basic to a headcount, and eliminated the potential jail penalty for non-compliance. The remainder of the maximum of 80 questions on housing quality, employment and education could be asked, but on a voluntary basis. The Government responded with extended assurances of confidentiality of data once collected by the Census Bureau. In the United Kingdom, a largely similar census format and penalties (fine and imprisonment) was the subject of some criticism[1] in and out of Parliament but no legislative reforms were introduced. Refusal to comply with the law was largely ignored in the United States, but in England at least one citizen was fined (80) and sentenced to 60 days in jail[2]. He was one of 500 to be prosecuted. Thirty thousand Dutch citizens were reported to have refused (or could not be found) to return census forms. A number of questions were challenged as well as the ADP format of the questionnaire. The Attorney General of the Netherlands ruled that 30,000 separate trials were too cumbersome and dismissed all charges against violators.

Data base integration. The idea of a centralised, fully integrated intelligence file system has been opposed by several governments for practical reasons and by civil libertarians on privacy protection grounds. In the United States the widely known OMB plan to establish a National Data Bank[3] was withdrawn to avoid further congressional and public criticism.

The mechanism to facilitate integration of data bases, and personal identification numbers is receiving considerable attention by the Parliaments of the two countries now considering adopting personal identifiers, Germany and the Netherlands. Statutory alterations will be required if wide-scale centralisation of public

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1) Computerworld, 19th May, 1971, p. 12, describes a bonfire of census forms in Bristol.

2) Computerworld, 16th February, 1972, p. 5.

3) See : Privacy and the National Data Bank Concept, Committee on Government Operations, United States House of Representatives, House Report 1842, 90th Congress, 2nd Session, 1968, Washington ; Special Inquiry on Invasion of Privacy, Hearings before a Sub-committee of the Committee on Government Operations, United States House of Representatives, 89th Congress, 1st Session, June 1965, Washington ; The Computer and Invasion of Privacy, Hearings, Sub-committee of Committee on Government Operations, 89th Congress, 2nd Session, United States House of Representatives, June 1966, Washington ; Computer Privacy, Sub-committee on Administrative Practice and Procedure, Committee on the Judiciary, United States Senate, 90th Congress, 1st Session, March 1967, Washington ; and Computer Privacy, same source, 90th Congress, 2nd Session, February 1968.

records is to become government policy in the United States, United Kingdom, Netherlands, and Germany. Other countries are also involved. A host of unanswered questions paves the way in parliaments for those who seek to concentrate data files in one or a limited number of multi-purpose agencies.

Regulation of ADP Systems. Public discussion about the form of regulation of data bases which would best serve to overcome perceived threats to personal privacy has not settled on an institutional framework. Only in the United Kingdom have there been concrete proposals for registration of licensing of data bases. Members of the United States Congress are growing more specific as to the duties of an agency to police public data bases but are undecided whether it should be an independent regulatory commission, an arm of Congress, or housed in the Executive Branch. The idea of an ombudsman is current in some countries.

Regulation of the operation of private credit reference bureaux is discussed in the following section. However, many-types and purposes of such ADP systems exist which have received little attention by parliaments or central governments. There seem to be other aspects of credit information bureaux potentially more damaging to citizens than a few breaches of confidence or erroneous reports - if personal credit files, for instance, were to be auctioned, as was the case in Boston, Massachusetts, by a bankrupt credit reporting agency[1]. The question of ownership or control of large data bases seems to be an aspect of regulating private ADP systems to which little attention has been paid.

Government employees' right to privacy. For the third time since 1966, the United States Senate has adopted a Government Employees' Privacy Bill[2]. Its purposes are to prohibit "indiscriminate" requirements "that employees and applicants for government employment disclose their race, religion or national origin, report outside work, answer questions about their religion, personal attitudes or sexual relationships, support political candidates, make charitable contributions, or disclose personal assets or liabilities"[3]. The issue is computer-related insofar as the United States Civil Service Commission maintains automated files on government employees and such information as would be barred by this legislation is sometimes collected by government agencies hiring personnel or otherwise comes to the Commission. No action has been taken in the House on the subject since its earliest introduction.

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1) Computerworld, 24th December, 1969, p. 6.

2) Known as "The Ervin Bill" for its origination by Senator Sam J. Ervin, S-3703 passed the Senate in 1971 by a vote of 90-4. The measure has been strongly endorsed by civil employee unions and vigorously opposed by the Civil Service Commission, FBI Department of Defense, and CIA as an infrigement on their activities.

3) Protecting Privacy and the Rights of Federal Employees, Senate Report N° 524, 90th Congress, 1st Session.

The use of computers by large accounting firms to prepare income tax forms for their clients, individuals and corporations is growing rapidly in the United States. Because these companies service thousands if not millions of clients and their copies of client tax reports are now machine retrievable, certain companies are alleged to have sold lists of wealthier clients or otherwise divulged confidential information on a mass basis. An amendment to the 1971 tax reform and reduction act forbids such practices. This is the only law regarding computers and confidentiality of information to be enacted in the 1st Session of the 92nd Congress (1971).

The gradual impact of the computer on the governmental process has slowed down earlier proposals to use this technology as the lever for dramatic alteration of public spending, structure of administration and intergovernmental relationships. Some evaluation of efficiency has produced disappointing results in the United States and post-operational reviews are likely to be demanded by European parliaments. On the horizon, several governments must reconcile the attitude of middle-level civil servants that computers are a tool to expedite data handling but have little bearing on organisational structure, with other planning-policy oriented officials who call for administrative overhaul to maximise computer benefits as well as government service functions.

Rapid expansion of data flow from municipalities and states to the central government may result in a new relationship between these two levels. Parliaments have traditionally sought to assure the continuance of a strong, local role in the administrative structure, often yielding to constituent interest where conflicts in designing new central government programmes have arisen. The intergovernmental co-ordination legislation popular in the United States Congress may in the long term result in a further dissipation of local authorities. The States of the Federal Republic of Germany are conscious of this threat, and as an integral part of "protection" they wish to assure, in computer utilisation, the retention of the proper balance in the roles of the States and the Central Government.

Computers and the quality of life

The extensive use of computers of more sophisticated capacities in the United States Government has converged with social innovation demands by Congressmen who want to improve the "quality of life" for Americans. The amassing of the widest variety of data on individual groups, particularly the lower income groups or racial minorities, and analysing of such information by computer-aided techniques can improve planning and evaluation of social programmes. The creation of large general purpose data bases in the Federal establishment would be necessary, it is believed, to allow qualitative measurement of social programmes.

At the close of the Johnson Administration the Department of Health, Education and Welfare prepared a document "Towards a Social Report"[1], indicating the need to develop sets of social indicators (similar to the fairly well-defined economic indicators which are used in determining economic trends) to assess characteristics of people and cities, then unknown. The "social health" of the nation would be evaluated by this method. Release of this document was followed in 1970 by Congressional hearings on a proposed Full Opportunity Act[2].

A Social Report by the President, similar to assessments made in the President's traditional annual Economic Report would be issued. The report would discuss progress in meeting social needs in such areas as health, education, training rehabilitiation, housing, vocational opportunity, and others. A Council of Social Advisors would be appointed to advise the President. This proposal has not been approved by Congress.

Environmental data bank. On a similar tack, a proposal for an Environmental Data Bank was considered by a House Committee in 1970[3]. This measure would have required the Environmental Protection Agency (EPA) to create a data bank to serve as the central national depository for all information, knowledge and data relating to the environment. A board within EPA would establish the facilities, including the necessary computers and data processing equipment. All departments and government agencies would be required to supply the data bank with information on the environment. One of the bank's functions would be to carry out research and develop information into predictive ecological models. This proposal is still under consideration.

3. 3 REGULATION OF NON-GOVERNMENTAL DATA BASES

The existent computerised data bases in the private, strictly non-governmental sector differs widely. Large companies employing thousands of persons often maintain personnel records in their computers ; thus insurance companies have vast files on individual policy-holders. The banking and securities industries

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1) United States Department of Health, Education and Welfare, January 1969, United States Government Printing Office, Washington, D. C.

2) Hearings before the Special Sub-committee on Evaluation and Planning of Social Programmes, Committee on Labour and Public Welfare, United States Senate, on S-5, 1969 and 1970, United States Government Printing Office, Washington,D. C. , 1970.

3) Hearings before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, United States House of Representatives, on H. R. 17436, June 1970, Government Printing Office, 1970, Washington, D. C.

are usually large users of computers for record handling[1]. Reference bureaux, particularly credit, medical employment and insurance, have become the most publicly controversial, partly because of alleged misuse of files, erroneous information they contain or the subjective, secretive ways in which they operate.

So far there has been no government regulation of the conduct of credit reporting agencies except in the United States. Governments have themselves generally adhered to high quality standards and administrative codes of practice but have not yet adopted their own specific regulations controlling intelligence data bases, for file content, quality standards and public access rules.

The case of the Fair Credit Reporting Act

The most extensive computerised networks of credit files today exist in the United States. After two years of deliberation a broadly applicable statute was adopted by Congress in 1970 to regulate credit reference bureaux. As a result of an extensively credit-based economy, the growth of local credit reference houses has expanded over the past 50 years in a fashion akin to the borrowing habits of the American people ($ 6 billion in 1945, $ 116 billion in 1969). An element of risk accompanies the grant of a loan or issuance of credit. Aided by computer technology and, in part, the mobility of the population, the credit reporting industry has become a nationwide interchange of information on consumers. The Association Credit Bureaux, a major trade association, has over 2,200 individual members serving 400,000 credit lenders in 36,000 communities. These bureaux maintain credit files on more than 110 million individuals ; in 1967 they issued over 97 million credit reports. Credit Bureaux typically supply information on a person's financial status, bill paying record and items of public record such as arrest and conviction record[2]. Information is generally used for credit lending although it may also be furnished to employment offices. A recent news release illustrates the rate of nation-wide network development in the United States.

> "TRW Credit Data is combining all of its 30 million files into one IBM 360/50 and will serve its 8 offices, including New York, Chicago and Detroit by remote link. The Company expects to process more than 50,000 inquiries daily, returning

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1) Retail companies and credit card organisation (e.g. Barclay-card, American Express, Eurocard) are widespread in adopting automated billing practices. See also the fully documented book, On Record, edited by Stanton Wheeler, Russell Sage Foundation, New York, 1969, which deals with all types of data intelligence collection.

2) Fair Credit Reporting, Senate Report 91-517, 91st Congress, 1st Session, 1969, Washington, p. 2.

answers within 3 minutes. About half of these inquiries will be made directly to the computer by credit granters with teletypewriter terminals"[1].

The pervasiveness of credit reference bureaux and the number of grievances arising in recent years over erroneous reports and secrecy in maintaining and receiving these files, caused considerable public pressure for congressional action. The Executive Branch had no operating agency nor power of administrative action to remedy the purported evils asserted by complaints, thus Congress proceeded to draft and adopt its own corrective measure. At the first hearing on the subject in March 1968, Professor Alan F. Westin of the Columbia University faculty summed up the raison-d'être for the inquiry :

> "Whenever any private activity becomes huge in size and financial resources, operates on a national scale, and affects the vital personal interests and civil liberties of millions of American citizens, such activity will come under Federal scrutiny and intervention to protect such citizen rights, especially when there is a vacuum of State and local legislation and court doctrines and an absence of decisive self-regulation within the industry"[2].

Another rationale held by law-makers in Washington is that a realistic promise from computer technology is "that Americans some day will be operating in a cashless, chequeless society with the credit card the only key to satisfying our material wants and desires"[3]. In the United States not only do most citizens applying for an array of credit cards receive them (for restaurants, shops, gasoline and airlines), but millions of such cards are mailed unsolicited to persons deemed "credit worthy" by various companies. "Every year 9 million cards are lost and of these at least a million are fraudently used at an estimated loss of $ 150 million"[4].

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1) Computerworld, 10th February, 1971, p. 4.
2) Commercial Credit Bureaux, Hearings before a Sub-Committee of the Committee on Government Operations, House of Representatives, 90th Congress, 2nd Session, March 1968, Washington, p. 4.
3) The Credit Industry, Hearings before the Sub-Committee on Anti-trust and Monopoly, Committee on the Judiciary, United States Senate, 90th Congress, 2nd Session, December 1968, Washington.
4) The Plastic Jungle, Hearings before Sub-committee on Postal Operatings, Committee on Post Office and Civil Service, House of Representatives, 91st Congress, 1st and 2nd Sessions, 1969 and 1970, Washington.

To regulate these practices, Congress began hearings in 1969. The economic power given to credit reference bureaux in such circumstances seemed wholly to justify concrete legislative action[1].

Formulating legislation

The first Fair Credit Reporting bill to be considered by the Congress was introduced in 1969 and hearings were held by a Senate committee. Findings and purpose were stated as follows :

" i) An elaborate interstate mechanism has been developed for investigating and evaluating the credit worthiness, credit capacity, character and general reputation of individuals.
" ii) In an economy which depends increasingly upon information on individuals for the extension of credit and the movement of goods and services there is a need that such information be accurate and readily ascertainable.
"iii) Credit reporting agencies have assumed a vital role in assembling and evaluating consumer credit and other information on the consumer and individuals.
" iv) There is a need to insure that credit reporting agencies exercise their grave responsibilities with fairness, impartiality, and a respect for the individual right to privacy"[2]. Marking such statements poses less difficulty than developing appropriate remedies."

The imposition of requirements and designation of an administering authority were the chief thrusts of the bill. The Federal Reserve Board was designated to execute a Fair Credit Reporting Act insofar as it is intimately acquainted with the field of financial institutions and had been previously charged with implementing the Truth in Lending Act (a measure designed to inform borrowers fully about interest and other charges accompanying the making of loans at banks and through other lenders). The Board of Governors of the Federal Reserve System, however, advised the Senate Committee that it was not prepared to assume the regulatory responsibilities inherent in effective enforcement. The Federal Trade Commission (FTC) which is charged with enforcing standards of fair practice in commerce, especially where consumers are involved, indicated a willingness to assume these duties. The bill was at first framed specifically for FTC administration :

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1) Fair Credit Reporting, Hearings before the Sub-Committee on Financial Institutions, Committee on Banking and Currency, United States Senate, 91st Congress, 1969, p. 2, Washington.
2) Ibid. p. 5.

> "It is the purpose of this (bill)... to require that all credit reporting agencies, utilizing the facilities of interstate commerce, adopt reasonable procedures... for meeting needs of commerce for credit and other information in a manner which is fair and equitable to the individual.
>
> "Every credit reporting agency shall follow procedures in conformity with regulations...to achieve the following objectives :
>
> "a) To insure the confidentiality of information obtained by the agency which bears upon the credit rating of any individual.
> "b) To provide any individual upon request, with a reasonable opportunity to correct information obtained by the agency which may bear adversely upon his credit rating.
> "c) To limit the collection, retention, or furnishing of information bearing upon the credit rating of any individual to those items essential for the purpose for which the information is sought and to preclude the collection, retention or furnishing of information which only marginally benefits the purposes for which the information was originally sought.
> "d) To keep current information bearing on the credit rating of any individual and to destroy such information after it has become obsolete or after the expiration of a reasonable period of time.
> "e) To notify promptly any individual whenever information which is matter of public record is obtained by the agency and which is, or is likely to be interpreted by the agency or its clients as adverse to the credit rating of the individual, and to provide a reasonable opportunity to the individual to submit an explanatory statement with respect thereto.
> "f) To insure that, unless the individual on whom the information is being furnished agrees otherwise in writing, the information obtained by the agency is furnished only :
>   i) to persons with a legitimate business need for the information and who intend to use the information in connection with a prospective consumer credit or other transaction with the individual on whom the information is furnished ; and
>   ii) for the purposes disclosed in the collection of information"[1].

In addition to these requirements placed on credit reporting agencies, the bill :

a) required the recipient of a credit report to notify a consumer when a negative report is issued against him results in a denial of credit. The individual is to be furnished the name and address of the credit reporting agency making the report, and stipulated that ;

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[1] Op. cit., Fair Credit Reporting, pp. 5-6.

b) if an individual is libelled due to a credit reporting agency which wilfully fails to comply with the requirements of the Act, actual damages and punitive damages up to $ 1,000 may be sought in any United States District Court, or other court of competent jurisdiction, within two years of the occurrence of the violation.

The legislative interplay taking place before final passage focused largely on a far more extensive measure, severe in its potential impact, according to most opponents of this type of legislation. House of Representatives committee hearings in 1970 followed Senate passage of a bill along the lines of the one first introduced in 1969. A resulting compromise significantly broadened and strengthened earlier proposals[1]. In November, 1970, the Fair Credit Reporting Act was signed as Public Law 91-508[2], to become effective 25th April, 1971.

Compliance provisions

A division of the Bureau of Consumer Protection, Federal Trade Commission[3] was designated to prepare administrative regulations for the Fair Credit Reporting Act (FRCA). This statutory code of conduct formalises some of the same guidelines developed by the credit bureau industry in the United States while legislation was under consideration[4]. FRCA imposes an internal regulatory function for FTC on the credit reporting industry and responsibility for maintaining proper disclosure practices to consumers. The Act is limited to companies dealing only in credit reports ; it does not cover medical or other types of information bureaux which may collect and distribute reports on persons. Nor are organisations such as department stores or banks, which maintain their own credit reference files on clients, covered in the Act so long as this information is not disbursed to other lenders.

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1) This hearing is particularly lucid in bringing out crucial issues and policy disputes between credit users and consumer protection advocates.

2) Complete text of the Act to be found in Annex I.

3) Copies of "Compliance With Federal Credit Reporting Act", prepared by Division of Special Projects, Bureau of Consumer Protection, may be secured from Federal Trade Commission, Washington, D. C., 20580. See also The Credit World, February 1969, p. 6.

4) Associated Credit Bureaux, 6767 Southwest Highway, Houston, Texas, prepared the "Guidelines for Protection of Privacy" for their client bureaux, omitting, however, any recognition of litigation by persons who may have been damaged by release of a credit report.

A consumer credit report is considered to be any written or oral communication that bears on a consumer credit standing, credit capacity, character, general reputation, personal characteristics or mode of living. It must be used by those who extend business credit or secure it for employment purposes. Government agencies are permitted to obtain consumer reports if they are directly related to credit granting or employment ; if it cannot justify the need for consumer reporting the agency cannot release such reports to the Government body [1].

Every reporting agency must set up reasonable procedures to assure the accuracy of the material contained in the reports. This includes proper training of its personnel, attention to accuracy in reproduction of reports and reliability of sources of information ; care must be taken to see that information can be accurately interpreted.

"Consumer reporting agencies employing automatic data processing equipment, particularly agencies that transmit information over distance by any mechanical means, must exercise special care to assure that the data are accurately converted into a machine-readable format and are not distorted as a result of machine malfunction or transmission failure. Procedures also must be adopted that will provide security for such systems in order to reduce the possibility that computerised consumer information will be stolen or altered, either by authorised or unauthorised users of the information system"[2].

Information must be kept current, bankruptcies may be retained for 14 years, tax liens 7, arrest and conviction records 7 years from the date of disposition, release or parole.

Any consumer presenting proper identification to a reporting agency and requesting disclosure of what is in the agency's file on him must be told clearly and accurately everthing that is in his file, with two exceptions, medical information and the source of "investigative" information. Agencies must also disclose to the consumer the names of any parties who have received employment reports within the past two years. If a consumer questions the accuracy or believes added material is urgently needed to clarify a fact, the agency is required to reinvestigate that information and bring the consumer's file up-to-date. The consumer may bring civil action for wilful non-compliance with the Act with no ceiling on the amount of punitive damages. Action may be brought also for negligent non-compliance for actual damages and attorneys fees.

Overall ADP regulation

The Fair-Credit Reporting Act may serve as an example of the United States' decision to regulate one functional area of

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1) Op. cit., "Compliance", p. 4.
2) Ibid.

computer data bases. Due to the clash of interests brought to Congress the legislation does not provide for strong enforcement procedures or FRC injunctions for violations. The peculiar regulatory situation in the United States Government meant that the institution for administration of such a law was not the first choice of its advocates. It remains to be seen whether a second statute will be needed to assure compliance and effective administration of the Act.

No attempt was made during the course of deliberations on the regulation of credit reference bureaux to extend its scope to include insurance, medical, employment, and personnel records of large employers. It was, rather, a special law to correct grievances in one segment of private data usage, manual or automated. In Europe, questions of regulating private data bases are likely to be of a general character, charging some administrative body of the central government with authority to prescribe rules and practices. This may be done within the framework of licensing and inspection of data bases as is being considered in Sweden and the United Kingdom.

Private data bases have become an issue of discussion in Canada, partly because large credit and other intelligence systems are located in the bordering United States[1]. In a self-protective way, the Canadians are attempting to develop standards which must be followed wherever data are housed or transmitted, inside or beyond their borders. This situation will be considered in Chapter V where supra-national data bases are reviewed.

The country profiles provide a basis for analytical examination. This analysis of country activities is divided into four main sections considered most important to development computer utilisation policy. Taken together, these sections represent a policy framework against which decision-makers can compare their own situations.

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1) Credit Reporting and Privacy, John M. Sharp, Butterworth and Company, Toronto, 1970, pp. 125.

Chapter IV

ANALYSIS OF PATTERNS OF DATA BASE POLICY DEVELOPMENT

Foremost among the requirements for an ADP policy is the institutional structure and function within the central government. The grist of computer tasks is obviously data, which are treated here from the standpoint of acquisition and management. A central theme in most research of this kind is the citizen, because it is the common good of society which government serves and the characteristics of its people that public officials use to determine social needs. Here the access to computer intelligence data and participation by citizens in determinations of how this technology should be employed come into focus. Finally, several additional elements not heretofore given special emphasis, as telecommunications and manpower, are presented.

4.1 CHARACTERISTICS OF STRUCTURES

In most OECD Member countries functions relating to advice, co-ordination and direction of ADP activities have been assigned to existing ministries, or Cabinet departments and in a few instances a totally new division, bureau or office has been established for these duties. Country size and governmental structure appear to have little bearing on structure of ADP co-ordination. Functional similarities between European central governments have resulted in Ministries of Finance, the Interior and Science and Technology having prominent roles. Even the United States and Canada do not present significantly different patterns of ADP practices and programmes for assuring co-ordination.

This degree of relative "sameness" will not be used as a reason to build a prototype of the ideal institutional framework. It is cited rather to illustrate the fact that particular choices of organisation structure and assigned responsibilities may be varied within most countries if better approaches are available. A number of effective techniques, as well as some liabilities, will be described here. Readers may relate the relevance of each institutional feature to his country's own needs and attitudes.

The unitary approach has a host of detractors, ranging from those who oppose centralisation of government powers for philosophical and political reasons to those who believe there are technological drawbacks to such a plan. The value of the unitary system as an instrument of important advancements in any country may be debatable. However, the Finnish example illustrates a number of highly salutary characteristics :

i) A statute created the Computer Centre and vested its control and that of other computer application fields in a single Cabinet Department. The Centre is specifically charged "to carry out tasks relating to the ADP requirement of government departments and institutions, ensure effective co-operation in the use of existing ADP equipment in different institutions, and advise and assist them in questions relating to ADP[1]".

ii) The Centre itself adopted more specific objectives : integration between registers, production of general programmes, and adaptation of ADP to new fields.

iii) In 1970 the Centre was operated at a profit, that is, no central government appropriation was required.

iv) The widest usership has been allowed.

v) Planning is at advanced stages, partly because objectives have been resolved, but means of attaining these objectives remain major issues. Schedules have been established for adoption of new central registers, a standard code to facilitate processing and integration, and a commencement of remote processing.

The advantages of having some form of computer service bureau under the auspices of the central co-ordinating agency have been demonstrated by the examples of the Finnish and Danish centres. Some experimental facility or on-line capability for integration may be a necessary aspect of directing central government ADP. There are such bureaux now in Finland, Denmark, the Netherlands and the United Kingdom and they are also planned for Norway and Belgium. The evaluation of systems, testing of confidentiality and security techniques, development of standards and similar tasks could be performed by these bureaux. Apparently the organisation responsible for enforcing a central goverment ADP policy must have in-house or close at-hand computer facilities.

Numerous committee structures proliferate ADP co-ordination. Upon surveying the duties and membership of some of those now in existence in various countries, their merits cannot be denied. In the 1960's the paramount function they served was a device bringing cross-pollination of techniques and advice among Departments and agencies, and a method by a central authority to collect information and initiate a basis of continuity from previously independent Ministries with regard to ADP. To some degree these functions continued in the 1960's. However, at the beginning of the 1970's in many

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1) Law, N° 196, Establishment of the Finnish State Computer Centre, Issued in Helsinki on 30th April, 1964.

countries these committees which formerly provided technical inputs to a central agency are becoming vehicles for outputs, directives and plans for concerted policy action for all ADP users.

The principal units of central government directing or guiding ADP operations in public administration must not develop into fortresses, repositories of all knowledge, large bureaucracies, unresponsive to rapid change and to outside participation in planning and programme formulation, unable to achieve a balance of initiative within the central agencies and channels of new information. As many as five types of committees should be considered, each reflecting the particular needs and stages of ADP development of a particular country. Whether greater inputs over outputs would take place in the work of the Committees varies with the country, specific functions and membership of the group and central agency (agencies).

Interministerial. Constitutional, statutory and traditional independence in information collection and retention characterise most ministries and Cabinet departments. A combination of authority, expertise, logic and suasion will be required to carry forward most movements to centralise ADP direction. This has been recognised in many countries, and interministerial committees function successfully.

Intergovernmental. Despite the role and structure of public administration in a country, local government is the main recorder-collector of facts about persons ; if there is to be effective integration of data and networking systems, there must be full participation (release of data) by municipalities, counties or regional governments. Central governments often have little with which to induce opening information access with local authorities. Financial assistance and some central administration information may not be sufficient to compensate for the danger of national encroachment on local rights and jurisdiction. A central government co-ordination blueprint must therefore be prepared for intergovernmental units

A separate branch of an intergovernmental committee might be set up for university and other government-financed activities involving data processing. There should be some formal linkage with segments of the private sector, especially banking, insurance and large corporations, which have the most advanced ADP systems. Another sub-group of an intergovernmental/interorganisational committee could provide liaison with private users.

Functional integration. The barriers to closer interfacing and interrelationships among departments with similar or overlapping functions for individuals are technical and administrative. Technical barriers are being reduced and dealt with as the following committee suggestions indicate. Reforms in public administration become obvious and pressing as inter-departmental co-operation in ADP advances. Resistance, or, more accurately, intransigence must be recognised and dealt with. A committee could deal with this subject in co-ordination with representatives of departments most affected. The central government co-ordination agency, having authority, could then see more clearly possible courses of action.

Standardisation codes. It is far harder to implement such codes than merely to design them. While country experiences vary, the use of personal identification numbers as a standard code is meeting some resistance in the Netherlands and Germany and a similar system has been attacked in the United States. A numbering system for real estate, businesses, etc., must parallel the personal identifier if integration is to be complete. In each of these categories, standardisation code committees would reduce difficulties and expedite compliance with central government regulations.

International linkages. The crossing of national boundaries by ADP systems is becoming more prevalent, as Chapter V will show. Various international organisations, particularly those working on documentation of science and technical information, are at work perfecting such systems and securing international participation. A central government co-ordination authority should offer formal liaison with these international groups and should be fully apprised of such linkages, actual or potential, by functional departments and agencies. Thus there seems to be much merit in an international liaison committee.

Emphasis on the need for committees to aid central government direction of ADP does not in any way lessen the responsibility of this organisation. In one or more countries several of the functions were described. In none did documents and other information indicate that the entire range of duties was carried out by one or more departments of central direction. It is suggested that each function should be a conscious, active assignment in the work of central direction, not necessarily formalised under an office or division but identified as an ongoing segment of overall responsibilities.

a) Technical competence. This agency should command sufficient ADP technological knowledge to review proposed projects and new systems requests, and carry out post-installation evaluations. While its staff would be small, there are occasions when it should advise government officials ; thus it should be capable of accommodating such requests. A specialised advisory agency in a technology department, or attached to a computer service centre, might service general government needs.

b) Procurement. This is the one function least readily surrendered to central ADP direction. The actual issuing of tenders and payments can remain in a treasury or fiscal office if budgetary planning for information and ADP is co-operatively prepared and the ADP direction has the power to veto any proposal for ADP expenditure in the central government and in subsidised regional and local governments.

c) Rationalisation in public administration. Many technical problems of integration and networking will be solved during the 1970's. Re-shaping governmental organisation structure to serve new functional arrangements may impede smooth progress unless the central ADP direction assigns staff to this project. This is indeed a controversial, sensitive area and seems to be widely recognised as a major challenge. The Japanese Government is working to develop a National Information System which depends greatly on the success of an administrative information system. Administrative agencies must be geared to new objectives, it is stated, and "for this purpose we must first switch from the conventional way of thinking, favouring vertical or pyramidal organisation, to more functional network organisation principles emphasising the information flow and more sophisticated information processing function in support of the new principle[1]".

d) Planning. The substance and strategy of planning are well described in French and United Kingdom reports. In France, co-ordination by the Délégation à l'informatique is accomplished by the elaboration of long-term plans by various departments into a national scheme and by the short-run control of equipment and applications[2]. In the United Kingdom the Planning Branch of the Civil Service Department has developed an extensive questionnaire calling for a six year forecast of ADP needs as well as a host of other details relating to an agency's perception of information functions and relationships with other institutions in the coming years[3]. There are many ways to plan, but this function is crucial to the effective current as well as long-range co-ordination of ADP.

e) Co-ordination of committees. A group of generalists should attend and contribute to the deliberations of the ADP committees suggested earlier. Direct verbal communication is made possible by a common forum which may be an excellent vehicle for discussing new plans for central direction or seeking advice on various proposals.

f) Policy formulation. Some high-level staff, probably including division heads of the ADP direction establishment, must continually concentrate on a total plan for information policy. The accumulating of all the intelligence gathered by each division will make available the best information for review and decision.

g) Computer Service Bureau. There will be need for some supervision over a government ADP centre, and this must be provided for under the central office.

h) Societal impacts. Unresolved social implications are a corollary to the technical and administrative advancements flowing from ADP benefits. Most governments have already seen the

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1) See page 92 of this report.
2) See page 52 of this report.
3) See page 56 of this report.

privacy and confidentiality issue raised. In some countries there is resistance to personal identification numbers and integration of data for greater manipulation by government agencies. Concurrent with future ADP action, and as remedial attention to civil liberties, the type of concerns suggested in the following section should be reviewed and appropriate decisions reached.

i) Special projects. The establishment of new register or introduction of personal identification numbers is the kind of large, often government-wide project which should be closely monitored. Project officers are not new to ADP co-ordination ; the earliest co-ordination function was to assist in developing computer compatibility. This should continue on a selective project basis.

j) Research. This is a standard office in an organisation requiring constant availability of information and analysis. The volume of reports and other materials available in the computer field suggests that the research office should house a library facility.

k) Public-private interface. The semi-isolation of private, commercial and education computing from the attention and co-operation of the central government ADP directing authority must be remedied. The reason for little interaction has been attributed to the all-consuming tasks of sorting out central government activities. Projections of computer development and information needs by government make it imperative that a partnership with the private sector be firmly established. The French "Plan Calcul" and Japanese "National Information System" embrace this concept and may serve as examples of this important interface.

l) Placement in government structure. The politico-administrative structure in each government must be used to determine the most effective and efficient location of a central computer policy unit. There are several criteria to be considered :

i) Proximity to the Chief Executive.
ii) Independence of functional Ministry.
iii) Relatively good access to Parliament and the Cabinet.
iv) Close liaison with the disburser of public monies.
v) Participation in government budget preparation.
vi) Framework for interministerial and intergovernmental contacts and communications.
vii) Channels of communications with private computer users.

Examples cited in France, Finland, the Netherlands and Sweden can be favourably reviewed in the light of these criteria.

The institutions directing central government computer policy should practise caution on three counts. One is the tendency to expand into the operational sphere by adding staff and becoming bureaucratic. A second is that to operate at the optimum, the agency should not have a direct role in promoting the national computer industry. The third caution is the need for independence of political decisions or leaders ; stability calls for freedom of action from undue political pressure but not an administratively visible role to these officials. The sagacious director of computer utilisation policies will perceive these and others and steer away from such entanglements.

4.2 DATA ACQUISITION AND MANAGEMENT

The emotionally charged and often elusive "right to privacy" has become a frustrating matter for government officials to contend with in many countries. A conclusion sometimes put forward by data base managers is that there has been little change in the past decade in terms of content and administrative handling of personal files, except for the new electronic method for information processing. The introduction of automated data processing has coincided with a period of increased government services and costs, and various forms of group alienation to the established political process. This and the following sections will attempt to provide insights on how to give pragmatic treatment to this sensitive issue.

Committees in several countries are trying to resolve knotty questions included in the theme "computers and privacy". A plethora of literature is available for background reference[1]. The real theme of research into computer privacy is related to the three aspects of government data activities : collection of intelligence information, processing and manipulation, applications. From this perspective, the machine is but one of three parts. Throughout the history of civilisation the three functions have been essential to governments. What the general public senses is that greater and more rapid changes are now taking place in both content and handling of intelligence files. Past procedures should be reviewed to determine their relevance to the current situation.

Collection. Computers do more than store, manipulate, interface and output data formats. They virtually eliminate storage problems such as were known in the manual file era. The expanded social, economic, health and educational role of central governments significantly raised the need for more accurate and consistent data ; new gathering techniques, personnel, lower costs and better coverage, make the expanded collection stage irresistible. The criteria of relevance are unlimited, according to some government officials and institutions contracted to conduct research, especially

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1) Of particular significance are : Privacy and Freedom, by Alan F. Westin, Atheneum, New York, 1967 ; The Assault on Privacy, by Arthur R. Miller, University of Michigan Press, Ann Arbor, 1971 ; and "Computers and Privacy", by Arthur R. Miller, Michigan Law Review, April, 1969.

in the United States. The information providers are on the giving end of this data collection explosion and consequently feel the new demands more keenly than many government officials.

One definition of violation of personal privacy is the taking of sensitive personal information against the will of an individual. In relation to government, which obviously must have considerable personal information, "intrusion on individual privacy occurs when citizens are required to provide personal information beyond the scope of valid government needs, when personal data once acquired by government is re-used for purposes unrelated to the purpose for which it was initially collected, and when the use violates a pledge of confidentiality"[1]. Government data-gathering practices can be constructively reformed in some parts of administration in several countries. The task is to ascertain what a data collection policy should include and how it will operate.

Processing. The computer is held accountable for inaccuracy because nearly always documents supplied by citizens must be processed into machine acceptable form. Evidence of errors are usually isolated but are nevertheless given wide public attention. No comparative measure of manual file integrity seems to exist ; thus glaring errors in computer outputs are taken as a reflection on the machine's competence. The checking and coding of data for computer input must be highly reliable, especially for systems not yet advanced enough to use clear text readers.

> "A radical change in technical possibilities often gives rise to new problems, and EDP has been no exception to this. Co-ordination and the quality of data inputs, the combination of data and the co-ordination and confidentiality of data outputs are questions which have given currency to new areas, thanks to EDP"[2].

The combination of data presents two difficulties :

- assuring correct interpretation of information by recipients of intelligence interfaces, and
- the correct matching of two or more sets of files in the integration process.

The particular need by one governement department to query a citizen may result in a certain set of answers to a series of questions. When the responses are processed for re-use, their original relationship to certain weighted questions may be lost. Encoding of data may pose no problem of understanding to officials of the collection agency, but secondary and tertiary inspections of the same data may give quite different impressions.

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[1] "Privacy : Establishing Restrictions on Government Inquiry", by G. Russell Pipe, The American University Law Review, June 1969, p. 516.

[2] "The Society's Data Banks and Information Systems", by Edmund Rapaport, ICA-Information, N° 5-6, November 1970, p. 37.

The value of developing total personal characteristic formats containing many elements to be recorded about individuals has growing merit. The objective, of course, would be to apply standard definitions and data quality requirements. A classification of personal information has been initiated in Norway. This information type guide might have secondary uses, for a sensitivity index, for example, but its main function would be for developing a personal characteristic profile.

Identification concepts are essential for large information systems by means of which particular units can be identified and can function as integration keys.

> "The possibilities of binding primary material together... constitute an indispensable basis for further development. Integration keys... particularly interesting for most users are primarily personal, real estate and business firm numbers. At the time it is the possibility of matching data, and whose practical consequences have not been fully determined, that causes problems".

The civil registration number in Sweden and other countries provides the linkage of personal data.

Distribution. The source of some public friction over ADP is its open invitation to re-use information for co-ordination, usually taking the form of an integrated information system. It may also be the transferring of data, information exchange of magnetic tape for special runs or on-line capabilities among different departments on a periodic basis. When a citizen divulges information about himself through a government form or questionnaire he generally expects that the information will receive only internal dissemination in the collecting agency. The notion that once the citizen's submission is no longer needed it will be locked away in some storage area still prevails with many people. Thus, when there is widespread distribution of such files and indefinite obsolescence, citizens are psychologically shocked and angered.

Few governments have rendered a straightforward decision on sharing data, or more accurately, building integrated information systems. The poles are these :

1. All or nearly all non-military, non-security records collected by or on individuals will be given the widest circulation and integration needed by government agencies in carrying out their duties. This will avoid duplication of effort and result in significant time and cost savings to the government. The same standard of confidentiality applied by the collecting agency will be exercised by further users.

2. Questionnaires, forms, applications and the like circulated to citizens for official purposes will be retained by the agency distributing the inquiry or requesting the report, and no further use, except possibly statistical manipulation, will be made of this information.

A mid-point in the grey area between these two extremes seems to be the practice of many governments - a practice which complicates their formulation and dissemination of a clear-cut statement of distribution of personal information. When integration of information systems is established, a general statement describing its contents and the functional departments participating in it might be useful.

> "A distinction can be drawn between data banks which can be expected to perform a contributory function in relation to an information system of this kind and those which can in the main be expected to be users of the system"[1].

In some countries it is not entirely clear whether a citizen loses some proprietary rights on information he supplies once it is passed on to various users. While it is doubtful if this idea could acquire solid judicial backing, it has been proposed that government forms and questionnaires contain a statement indicating the parameters of circulation the contents may receive. At a time when integration is receiving much attention from a technical point of view, those of its features which are disturbing to the public should not be overlooked.

Confidentiality and Security. It is a normal and proper reaction for computer technologists to respond to requests for protection in data systems by saying in effect : "You tell me what I have to make secure and I will tell you the cost of making fool-proof security devices". The data base manager receiving this answer to his request for assistance in developing a secure system often believes it is an unsatisfactory roundabout response. Actually, neither question nor answer is satisfactory to the confidentiality and security issue.

Data confidentiality is achieved by the management of information within a computer system for use by specialised groups of persons (officials of departments, agencies and others), but isolated from unauthorised observation[2]. The management obligation extends to information in both manual and machine output form. It involves preparation of data for automation including accuracy,

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1) Op. cit., "The Society's Data Banks", by Rapaport, p. 40.
2) "Security and Privacy : Similarities and Differences" by Willis H. Ware, AFIPS Spring Joint Computer Conference Report, 1967, p. 287.

verification, and proper formats for interpretation. A management function is to ensure that any time information is outside the computer, it is not negligently handled.

Data security is the installation of designs and methods in computer and transmission systems which prevent release to unauthorised sources. The impression that data security is inherently connected to "classified" information of defence or other police/para-military nature is false. Acceptance of this connotation for classified defence data and economic, social or political intelligence files on individuals for general government use will lead to serious confusion on how to develop and implement confidentiality and security policies.

> "It should be noted at the outset that the context in which security must be considered is quite different from that which can be applied to the privacy question (non-defence information). With respect to classified military information there are federal regulations which establish authority, and discipline to govern the conduct of people who work with such information. Moreover, there is an established set of categories into which information is classified. Once information is classified Confidential, Secret, or Top Secret, there are well-defined requirements for its protection, for controlling access to it, and for transmitting it from place to place. In the privacy (non-defence information) situation, analogous conditions may exist only in part or not at all"[1].

The preceding is a succint statement of the challenge to data base managers and decision-makers at all levels. Where there are partial or otherwise inadequate regulations, discipline and standards of conduct for persons handling classified information, classification categories, well-defined requirements for data protection for non-defence information, they should be improved and enforced by legislation or government order. It is the responsibility of management to assure data confidentiality. Enforcing the rules of data protection and employing the necessary software and hardware controls to provide data security is the job of computer technologists.

This is not to contend that such tight control on tax, population registers, census reports, driving licences and payroll records should be adopted. Rather, this should not be the case for civilian information :

> "Within computer networks serving many companies, organisations , or agencies , there may be no uniform governing

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1) *Ibid.* p. 279.

> authority ; an incomplete legal framework ; no established discipline, or perhaps not even a code of ethics among users. At present there is not even a commonly accepted set of categories to describe levels of sensitivity for private information"[1].

Some officials are still required to find workable definitions of these important terms and concepts. Privacy can be violated on the extraction of sensitive personal information. It is the responsibility of proper management to ensure confidentiality of information in the possession of public authorities. The automated equipment and methods for protecting data in machines and in electronic systems is data security.

Management Controls. The numerous aspects of the management obligation have already been treated ; at this point, however, a formulation plan for regulating information systems might be useful. Information system regulation should apply to conventional types of files as well as to automated files. Such a regulatory plan must take into account a wide variety of forms, ranging from listing in the telephone book to security files.

The following proposal deserves consideration :

> "It is proposed here to classify information systems containing data about individuals according to three characteristics, each with two or three categories. The characteristics and categories are as follows :

Characteristic	Category
Data Source	P--public record S--supplied by individual O- other
Distribution	I-- internal E- external
Inspection	A- automatic R- upon request of individual F- forbidden

> "Although the terms used for the categories convey a general sense of their meaning, precise definitions have to be given.
> "For Data Source it is clear enough when the data is supplied by the individual himself, and since 'other' is defined by exclusion, the definition hinges on what is meant by public record. This could be defined by listing those sources which are acceptable, - for example, public service awards, vehicle registration, records of criminal convictions, voters' lists, etc.

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1) Ibid.

> "For inspection 'automatic' category means that a complete print-out of the information about an individual is sent to him at specified points, either periodically, or whenever a change is entered. In the 'request' category there might be conceivably some small fee charged if a person wishes to see his print-out, so as to discourage nuisance requests, but there should be no other condition imposed. In particular an individual must be allowed to see the whole record (otherwise the category should be 'forbidden'), and he should not be required to sign forms which prohibit him from presenting claims for damages arising out of improper operation of the information system.
>
> "The most difficult categories to define are 'internal' and 'external', with respect to the distribution of information which is restricted to the company or institution which maintains the information system, unless there is explicit permission of the individual about whom the data pertains, in every individual case, to transmit it elsewhere. Perhaps 'internal' should mean a single department or office. For a company, a decision would have to be made whether various subsidiaries were to be considered internal, and even for a university, where the question arises whether different faculties and schools are to be considered as internal to the one institution"[1].

Professor Calvin C. Gotlieb of the University of Toronto, the author of this classification system, may oversimplify in the difficult characteristic "distribution". Several gradations of both internal and external access would probably be required in any major information producing department or agency. Selective release of elements in an intelligence file when integrating data bases may be a formidable task. These and other decisions notwithstanding, some method should be devised to accomplish the goals. In the final analysis, Professor Gotlieb believes :

> "Eventually the only satisfactory solution will be to attach security tags to every data field, and use these tags to determine under what conditions the information may be disseminated"[2].

Data management, apart from the infrastructure or environment in which it must be applied, has a formidable task to fill policy gaps in such areas as rules of operation to assure confidentiality in supervising computer systems, to see that security is protected, and even in the area of human values.

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1) "Regulations for Information Systems", Professor Calvin C. Gotlieb, Department of Computer Science, University of Toronto, Computers and Automation, September 1970, pp. 14-17.

2) Ibid.

4. 3 ACCESS AND PARTICIPATION

> "In a democracy, we are concerned primarily with the relation of the individual to his government - a just government. And the maintenance of this overall relationship has greater importance than the isolated search for fact - or even justice - in any specific case"[1].
>
> "The fact is that American society wants both better information analysis and privacy. A free society should not have to choose between more rational use of authority and personal privacy if our talents for democratic government are brought to bear on the task. .. If we act now, and act wisely, we can balance the conflicting demands in the area of data surveillance in this same tradition of democratic, rational solutions"[2].

The fact that public discussion in several countries gives currency to questions of citizen access to personal records held by public or private sources or democratic participation in computer utilisation is prima-facie evidence for central government concern. The fact that the cause is attitudinal rather than substantive complicates a clear-cut resolution of these various questions. Watchfulness that the fabric of trust between the citizen and government does not seriously unravel requires subtle handling of this issue for most countries in 1972 and in the years to come.

Given the existence of citizen rights of participation in policy formulation for computer applications and certain prerogatives of access of a negative right to assure that certain classes or elements of personal information are not contained in information systems, one has to examine what this means in specific terms :

Citizen Bill of Rights. Books, articles and addresses by responsible and often highly reputed citizens on the subject of their failure to receive positive assurance that confidentiality and security of personal data are secured, prompts a demand for new citizen rights over government recordkeeping. These spokesmen for new rights for the people are trying to avoid further alienation in society - the feeling that they are being overwhelmed by the rapidly changing environment in which they live[3]. The concept of privacy being somewhat ephemeral, the "computer bill of rights" is designed to maximise the citizens role in intelligence file maintenance.

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1) "Rights to Privacy", letter to the editor, by Samuel H. Hofstadter, Justice of the Supreme Court, State of New York, The Wahington Post, 6th August, 1967.

2) "Legal Safeguards to Insure Privacy in a Computer Society", by Alan F. Westin, before 1967 Spring Joint Computer Conference.

3) Future Shock, Alvin Toffler.

i) The citizen should have the right of personal access to inspect his personal file ;
ii) There is a right to challenge inaccurate and irrelevant information contained in government files ;
iii) The citizen has a right to be told who (what agencies) inspect his file(s) ;
iv) There is a right to damages if confidential of false information is dispensed ;
v) There is right to exclusion from records of all information revealing intimate habits, beliefs or ideals[1].

These rights incorporate for the most part the Fair Credit Reporting Act of the United States, enacted to regulate private credit reference bureaux. A different standard may be necessary for public bodies to meet the quest for some access and at least a negative assurance by government that his intelligence files are not being put to wrongful use.

Public education. Long-term incorporation of materials on computers and automation into educational curricula, as well as exposure to the hardware itself, will narrow any further gap between the government and society over the present and future potentials of the new technology. No doubt the present lack of understanding, indeed comprehension, by older citizens may never be cured. Computer education need not be confined to central government nor public institutions. With the increasing numbers of ADP machines in a country, all important users could devote some time to acquainting all employees, families and friends with their computer operations. Central governments decision-makers must keep this means of informing the public in the forefront of future planning.

Notion of print-out. The proposition : "every citizen has a right to a computer print-out of all (non-security) records held by central government agencies", must be given careful scrutiny rather than casual approval as has been the case with some public officials. The cost and complexity of such a task would probably bring to fruition a centralised intelligence data base employing standard personal identifiers, an effect generally opposed by those supporting the notion of right to print-out. Further, in more sophisticated systems, data is being accessed, changed or purged frequently ; it would, therefore, be difficult to produce up-to-the-minute information sheets. Population mobility would reduce security, since a blanket mailing of personal file information would result in a quantity of it being lost and undeliverable[2].

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1) "The Computer v. Privacy - a Computer Bill of Rights", by Dennis van Tassel, Law and Computer Technology, Volume 3, N° 1, January 1970.

2) IBM (United Kingdom) Limited is the only organisation the author could find which has commissioned a research study on the possible implications of a right to print-out. In their case the study is directed at local government.

An alternative proposal, embraced in part in the Fair Credit Reporting Act, is the right to inspect personal files at the collecting agency's nearest office with a terminal. The public assistance, educational boards, tax and pension offices could not meet the demand of curious constituents if this were a public policy. Perhaps later, when the personal identifier becomes a key to release file information at the local post office terminal, such an access right can be contemplated. For the moment the opportunity to challenge and rebut derogatory information in personal files in government departments and agencies may be a compromise position. Such a rule would entail advising those refused some public benefit of the source of negative information used in arriving at a decision ; armed with this knowledge, a citizen could confront the agency maintaining the file.

Any new administrative practices on personal data release should build upon the long traditions of satisfactory management of sensitive information established by governments. This is not to suggest the status quo situation ought to continue because a citizen should be assured that :

i) data integrity remains very high in conversion to automated form ;
ii) restrictions on access are controlled ; and
iii) he can be informed of one source of decisions, especially negative ones.

Simply adding the right to inspection, as has been suggested, will be an effective device to reduce public fears about record-keeping only if citizens can be made aware of the source of a sometimes unrelated negative decision. Notification, while nearly as important at this point of data distribution of files, can be made a normal practice, thus alerting the citizen to participating agencies receiving his file, or when unfavourable action is taken against someone, its basis can be more fully elaborated.

In new institutions, a prominent element to regulate or oversee ADP usage in central government is normally said to be citizen confidence, meaning some access and participation. In its most elementary form such an institution could be a "listening post" for citizen suggestions and complaints, where in instances of a serious nature an investigation could be undertaken. Citizen representation on an advisory panel to the government on computers is another direct method of input from the non-government sector. In the United States, one approach to the computer and the citizen controversy could be resolved by establishing a broadly mandated consumer protection agency.

The United States Congress has been considering several bills which would create a new agency to represent consumer interests, consolidating many of the present diffused activities within the government[1]. An "independent consumer advocate" which could collect information and intervene on behalf of consumer complainants when goods purchased are defective or dangerous, has had wide congressional interest. There is a possible parallel between consumers or purchasers of goods in the private sector and their complaints when a product or service is unsatisfactory or harmful and the individual when his personal characteristics are carelessly disseminated or are harmfully inaccurate.

Proponents of a strong government agency to aid blighted consumers contend that fragmentation and the lack of resources of the consumer movement, not apathy, threatens their interest. The necessity for amassing the required expertise and effectively advocating its cause is said to be lacking. The concept of a Federal consumer protection agency free of regulatory powers and not under Executive control (the President) would allow the agency to act as a private citizen.

The term "consumer" is not clearly defined in the United States congressional debate, although it is apparently limited to purchasers of goods and services in the private sector, and does not apply to a consumer in his relationship with the Federal Government as a beneficiary (or recipient) of payments or services. Claimants for Federal benefits would continue to use existing channels[2].

Creation of a consumer protection agency is established and will give citizens the opportunity of registering complaints. Such an agency might be an appropriate body to receive evidence by persons of misuse of personal data held in private or public files.

The many alternatives to institutional framework are presented elsewhere in this study. This sub-section is included to emphasise the importance of a communication channel for citizens to various central government agencies.

4.4 ADDITIONAL ELEMENTS OF DATA BASE POLICIES

The trend toward an integrated systems approach to information, computers and communications imposes a responsibility on central directors of ADP policy to incorporate communications technology

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1) Consumer Protection Legislation, Hearings before a Sub-Committee of the Committee on Government Operations, on H. R. 16 related bills, April-July, 1971, Government Printing Office, Washington, D. C., 1971.

2) Letter stating interpretation of Department of Health, Education and Welfare, on H. R. 14, to Congressman Frank T. Bow, 12th August, 1971, Congressional Record, 13th October, 1971, p. H9515.

in addition to computer technology. "During the 1960's the formerly disparate technologies of computers and telecommunications merged to create a class of combined computer-telecommunications systems"[1]. Infrastructure separation of the telephone/telegraphic services from ministries storing information and utilising transmission facilities in Europe can slow up development if close co-ordination between present and future needs and performance capabilities is not observed. In the United States and Canada, the private, government-regulated communications industries pose challenges not unlike those in countries where these services are entirely public.

Computer/communications development. Benefits from an integrated, balanced approach to computer-communications development have been calculated in terms of potential cost savings and productivity[2] increases. While the economic dimension is normally the first to give impetus to government action it is not the principal objective of this discussion. The intertwined nature of communications to data base integration is the point to be stressed ; it should also be pointed out clearly that in the absence of one technology, the other cannot be exploited. The same OECD report stresses :

> "The term integrated approach will be used to emphasise that the two technologies must be seen together from a technical as well as from an economic and organisational point of view"[3].

The integral nature of computer-telecommunications systems to central government is seen as a matter for the immediate attention of public administration.

> "As the technical trends and the urgent need for computer-telecommunications systems as a working tool become more and more evident, the need to make technical, economic and political plans for the creation of telecommunication-based information systems represents an excellent managerial challenge.
> "The preparation of these plans would be a major milestone in the history of the human species : for the first time the distribution of a major technological change could be planned and directed in the public interest with the probable social consequences taken into account . The alternative is to proceed as in the past, i. e., to be the unwilling victims of an unplanned

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1) Dieter Kimbel, Computers and Telecommunications-Economic, Technical and Organisational Issues, Informatics Studies, N° 3, OECD, Paris, 1973.

2) Ibid.

3) Ibid.

> technological development, resulting in a multitude of non-compatible, individual objectives and unnecessary expense, caused by failure to plan and integrate developments"[1].

Evidence can be seen of technological co-operation to minimise disorientations in development, but the interweaving of central government planning objectives and central decision-making on the substance of these objectives is far from perfected.

Manpower training policies. The manpower required to operate computers at the competent levels the technology and public administration demand is not insignificant. Whether considered as a responsibility of the educational authorities or given direction in a central government manpower utilisation ministry, the recruitment and training of the numbers of personnel for private and public computer employment is recognised in most OECD Member countries. A commentary on computer personnel training policies relates how these countries are taking action to meet the imposed demands :

> "Most governments in Member countries have already acknowledged that it is the function of the public education system to provide this training and are therefore planning and setting up new structures giving the subject of data processing its place in education generally. These structures are designed to provide education better tailored to the level of skill required and to enable changes in computer technology to be reflected in continuing training. Implanting structures with these objectives calls for far-reaching reform of the education system and this cannot be done over-night.
> "Alongside the changes in public education the authorities are taking steps to regulate private training activities and certification systems by laying down standards for examinations and issuing standardised diplomas"[2].
>
> This OECD report raises two important questions :
>
> "1. How do public authorities tackle the retraining of their administrative staff in data processing ; and
> 2. In view of their experience as employers what standards will they apply in recruiting staff for data processing jobs"[3].

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1) Ibid.
2) Panel on Computer Manpower Training Policies, Directorate for Scientific Affairs, Computer Utilisation Group, OECD Document.
3) Ibid.

Information collected for this report shows, in answer to Question 1, that executive orientation, high level training sessions and briefings are conducted for upgrading public administrators' skills in many countries. There is little clear response as to action, however, as regards Question 2.

The important dimension for policy-makers is that the full role and impact of personnel training should be incorporated into unified national planning. The warning is sounded here against relegating training to a lesser rank than many others described in this chapter. The human element is vital to success in the machine era of computer technology.

Performance Evaluation. The efficiency audit, or more accurately termed computer systems performance evaluation, is to become an important aspect of computer policy-making. A great deal of research and concentrated effort is currently being directed to computer procurement practices and introductory stages of central government systems. The trend towards integrated data bases will undoubtedly require close scrutiny of existing computer systems as networking and consolidation of certain types of data are developed.

There are two essentially different approaches to performance evaluation : management/efficiency and technical. The fact of knowing the objectives in terms of adopting computers in government service should be given sufficient treatment from the vantage point of actual performance. This post-facto review of computer systems, from both approaches, can be of vital importance to the central policy and planning authority and a guide to the users.

To the extent that integration is the short-to medium-range government objective, the evaluation of a new system after a suitable trial period can provide the basis for accelerating the desired integration.

Qualitative measurements and methodological approaches for evaluating computer systems are largely unperfected. Research is in progress in a number of countries and in the OECD to contribute to performance evaluation techniques. In 1972 the Computer Utilisation Studies Group consultant study will include definitions, the full scope of costs of a computer system, administrative factors on procurement and use, and importance after installation, as well as criteria for the evaluation of computer systems-performance. Such a study, together with special applications produced by various countries, will serve as a sound beginning point to overcoming these problems.

It should be clear from the analysis applied to the scope and content of ADP policy development, that a considerably wider range of subjects should be included. Those central governments which are cognizant of these factors can incorporate them into the structures and their substantive assignments.

Chapter V

FORMATION OF INTERNATIONAL AND SUPRANATIONAL COMPUTER LINKAGE SYSTEMS

> "... at present (data) passes uncontrolled across most national boudaries"[1].

Parallel to the requirement for central government policies concerning computer data bases is an increasing need for supranational regulations governing the import and export of electronically transmitted data. Such codes of regulations incorporate technical standards including compatibility of systems, confidentiality and security of data stored and transmitted, and some normative dimensions as to the propriety of holding various sensitive information on individuals. Spokesmen for international regulations admit that the volume of activity in terms of data transmitted, communications lines and inter-connected terminals among two or more countries is as yet relatively small in terms of actual operational systems. Nevertheless, the financial outlays and purely technical considerations are soon to be such that an absence of international co-operation on a wide scale may jeopardise a number of types of economically marginal (non-commercial scientific and technical social and cultural) data linkages.

5. 1 PRACTICES

Private and commercial data base networks between points in the United States and Canada represent bi-national linkages. Multi-national linkages involving public and private sectors are more likely to be found in the future in Continental Europe within the Common Market countries. The report on a Pilot Computer Communications Network Cost Project 11[2] reflects the line of

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1) Statement to "Commission on Privacy", British Computer Society, 29 Portland Street, London.

2) Report of Study Group on Project 11, Pilot Computer Communications Network, Secretariat of European Co-operation in the field of Scientific and Technical Research, EEC, Brussels, 10th June, 1971.

thought of some government officials and segments of the EEC. The project would involve setting up a pilot computer communications network to link up certain European data processing centres. A summary of the recommendations of the Study Group further illustrates what is proposed :

" - Nations and international organisations should participate in the experiment by nominating a research or data processing centre ;

" - Joined by communications circuits to form an international mesh-network, with at least two alternative paths for communications between any two centres ;

" - At each centre a computer would be dedicated to the control of the communications circuits. It would intercept traffic addressed to the local centre and redirect and forward "thru" traffic as necessary ;

" - At first the experiment should be restricted to a few centres only. But once the network is in service, other nations or international organisations should be able to join at any time, possibly by providing their own capital equipment and data links and paying an appropriate portion of the shared costs already incurred ;

" - A recommendation for a Communications Computer and programmes for general use must be made : this computer should be of a type designed and made in Europe. However, nations may wish to choose their own computers, and for this to be possible appropriate standards and specifications are to be formulated ;

" - Specifications in the link-control language will require frequent meetings between experts from each centre.

" - At the end of the three-year experiment the networks would be turned over to the P&Ts as a basis for international data communications networks"[1].

Project 11 was approved at the Science Ministers' Conference in Brussels on 23rd November, 1971 ; the following countries are participating in the project : France, Italy, Norway, Portugal, Sweden, Switzerland, United Kingdom and Northern Ireland and Yugoslavia. Despite the desirability or lack of it in this proposal the general principles on which it is founded should have wide acceptance :

i) The exchange of ideas and co-operation between data processing research establishments and eventual sharing of resources should be facilitated. This would also promote agreement on European standards.

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1) Ibid.

ii) National network schemes would be focused on an international dimension, allowing for co-operation between research centres.
iii) There is a need for a model data network for commercial and other networks now in the planning stages.
iv) There is a need to involve the P&Ts of several countries in planning courses of action to meet computer/communications demands.

The employing of the test model techniques and actually experimenting with an international data transmission system have certain potential merits over the traditional international conference method of arriving at agreement on matters affecting several nations. The two, no doubt, would be required before formal regulations or codes of practice received official endorsements by governments.

From a quite different perspective, the Council of Europe has recommended establishing a European Computer Agency to place Europe in a strong position in the computer technology field.

> "Western Europe should seek to regain and maintain a position of real technological independence and leadership in a field... eminently suited to European skills"[1].

The Council has called on Member countries to "initiate as a matter of urgency efforts to come to an agreement on European standards and on common European public computer procedures"[2]. The implementing of this position should take the form of an "enlarged technological working party" to :

> "examine the contribution which could be made to European computer development by the establishment of a European computer agency (along with lines as in Japan) and to charge such an agency with the implementation of a European computer policy"[3].

International linkages and networks are of three types :

- private commercial ;
- technological and scientific ;
- social and political.

The heaviest international concentration of activity to date has probably been on the discussion and exchange of scientific and

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1) The Computer Industry in Europe - Hardware Manufacturing, Council of Europe, January 1971, Strasbourg, France.
2) Ibid.
3) Op. cit., Council of Europe.

technical information. The UNESCO Inter-governmental Conference for the Establishment of a World Science Information System (UNISIST) held in Paris, received considerable news coverage in 1971[1]. The conference programme was based on the belief "that economic and social progress depends to a large extent on the transfer of scientific and technical information"[2]. The scope of the proposed system has been directed to the basic natural sciences ; applied sciences and technology were to be added later. At the UNESCO meeting possible inclusion of other fields of knowledge was approved.

While UNISIST is a skeleton form and the world-wide context in which it is to be constructed is viewed by some developed countries largely as a vehicle for transferring research knowledge to less advanced countries rather than a mutual contributory exercise, the need for some system or international standards of operation was strongly underscored by Pierre Piganiol :

> "due to needs of information by countries, numerous links are being established between documentation centres at national levels. Unco-ordinated development between parts of government instrumentalities can lead to disorder"[3].

From still another point of concern various recommendations have come for international regulations governing computer data linkages and networks. The United Nations Division of Human Rights study "Human Rights and the Use of Computers in Public Administration[4]" concludes that appropriate safeguards are necessary to assure the preservation of human welfare and dignity when computers are used in public administration. The broader context of right to privacy has been the subject of several meetings sponsored by the Council of Europe. A sub-committee of the Union Internationale des Avocats has been asked by the Council to provide a draft convention and model law on the right of privacy. Computer applications in an international context have been considered in this sub-committee's report.

The growing harmonisation of economic and social policies in EEC countries and efforts toward consolidated policy development as discussed in preceding chapters, leads to the assumption that

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1) Final Report, Intergovernmental Conference for the Establishment of a World Science Information System, Paris, 4th-8th October, 1971.

2) Ibid.

3) Op. cit., UNISIST.

4) See reprint of article "Human Rights and the Use of Computers in Public Administration", in Public Administration Newsletter, March 1971, N° 37, p. 3, Department of Economic and Social Affairs, United Nations, New York.

considerable amounts of central government data may be flowing on line to the Brussels administrative headquarters in the next few years. An EEC commissioned study "Demand for and applications of extra large EDP systems in the EEC countries and the United Kingdom in the 1970's"[1] describes the concept of "total information systems" (TIS) - all inter-relations between public administration and public and private economic organisations[2]. The workability of TIS requires a co-ordination centre in central government for the total system, principal sub-systems, and major projects. When the central co-ordinating problem comes to fruition a concurrent capability will emerge for linking various intelligence and statistical systems among countries.

The actual examples of multi-national data linkages outside the police (Interpol) and defence (NATO) and other security related agencies are many. The International Atomic Energy Agency is establishing INIS, the International Nuclear Information System. The ICSU Abstracting Board and the International Federation of Documentation are endeavouring to develop major international programmes.

> "An international patent information system, ICIREPAT, is formally in existence and is rapidly becoming an important mechanism for exchange of patent information. The International Standards Organisation, the Workd Meteorological Organisation, the Food and Agricultural Organisation, the International Labour Organisation and the World Health Organisation all have extensive international information programmes. The World Data Centres, established during the International Geophysical Year, comprise a worldwide information gathering and dissemination network"[3]

Within the OECD an International Road Research Documentation programme has begun to provide member countries with more readily available references on road development and standards. After the Environmental Protection Conference held in Stockholm in June 1972, the United Nations will consider how an Environmental Data and Information Bank is to be created. There are also registers

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1) Demand for and Application of Extra Large EDP Systems in EEC Countries and United Kingdom in the 1970's, prepared by SORIS (Economic Studies and Market Research), Turin, Italy, January 1970.

2) The problems are said to be with : 1) input data : organising and coding ; 2) tele-transmission : cost of terminals, lines and telecommunications ; and 3) specialists : lack of trained people to convert and retrain government personnel.

3) Information for a Changing Society, OECD, Paris, 1971, p. 22

of professionals, organ transplant donors and toxicological data bank and others.

The European Space Research Organisation (ESRO), has electronically filed references to over 1,000,000 documents in their computer in Germany. These are retrieved by means of on-line terminals installed at various locations throughout Europe. Present coverage is within the aerospace, nuclear science - engineering fields, but the intention is an expansion of coverage to include physics, electronics and automation. The RECON network of ESRO consists of a number of high capability leased telephone lines between their offices at Frascati, Paris and Noordwijk, and the computer in Darmstadt. Attached to this spine are branches in London, Brétigny and Munich. An installation for Euratom in Luxembourg was completed in 1972.

5.2 IMPLICATIONS

The implications of the foregoing are clear :

1) Computer data base linkages and networks will expand, probably at a rapid rate in Central Europe and between the United States and Canada ;
2) Independent action by governments and private computer users in building these systems is resulting in a divergence of technical differences and standards of data quality and compatibility. Just as these implications are quite succinct and clear so, too, is the course of action needed to assure harmonisation. The adoption of international standards, desirable as this would seem to be, lacks agreement on the most suitable forum for action.

Selecting or creating such a forum must be based on several factors, including capability or experience in this field of activity, country membership of a scope to include those of relevance to the issue, and suitable level of central government participation to allow for meaningful inputs and reactions when proposals are advanced. The institutional arrangement of the OECD presents the credentials to meeting the foregoing criteria which the United Nations and Council of Europe may not. Relevant country memberships at the outset favour an OECD forum for the discussion of computer and communications policies. However, inasmuch as national delegations could be assembled ad hoc or such a task, this cannot be considered an overriding consideration. The government-to-government, middle-to-high-level representation at various points of participation in OECD activities commends it as a working body to consider these issues. The trend toward an integrated system for information, computer and communications requires that a research staff combine these three inter-related factors of computer/communications policy.

It is not the function of this study to recommend either specific action on the international front or a forum for its enactment. Prima facie evidence exists as to the need for action, and of the OECD's organisation structure and history of activity in this relevant area. This chapter was designed to add the final, important link in calling for computer policy development. An earlier report cited the need for policies governing functional computer systems[1], earlier chapters here call for an overall central government policy, and this chapter extends to international applications. The clearly visible networking of information systems among countries calls for early attention.

Forms of activity in co-ordination of ADP including legislation are manifest in many countries. This is also true of linkages and networking between and among countries. The protection of individual rights is not, and may never be, the paramount international issue in setting international rules and practices. Currently, it is of importance, however, The French Délégation à l'informatique has come forward with a proposal :

> "It is the earnest wish of the French Délégation that any legislation introduced in individual countries - particularly those which are members of the OECD - should be harmonised, if need be by an international convention. Failing such harmonisation, there is reason to fear that information will find its way to data banks set up in those countries which have taken least steps to protect individual privacy"[2].

The motivation for harmonisation extends laterally across many areas of computer and communications activity. The recognition of the need for action will be an important first step toward some initiatives.

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1) Uwe Thomas, Computerised Data Banks in Public Administration, Informatics Studies, N° 1, OECD, Paris, 1971.

2) Special Opinion of the French Government, letter to the Computer Utilisation Group OECD, from J. P. Costa, Auditeur au Conseil d'Etat, Chargé de mission à la Délégation à l'informatique, 7th May, 1971.

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Annex I

THE FAIR CREDIT REPORTING ACT
PUBLIC LAW 91-508

Section 601. The Consumer Credit Protection Act is amended by adding at the end thereof the following new title :

"TITLE VI - CONSUMER CREDIT REPORTING

"Sec.

"601. Short title.
"602. Findings and purpose.
"603. Definitions and rules and construction.
"604. Permissible purposes of reports.
"605. Obsolete information.
"606. Disclosure of investigative consumer reports.
"607. Compliance procedures.
"608. Disclosures to governmental agencies.
'609. Disclosures to consumers.
"610. Conditions of disclosure to consumers.
"611. Procedure in case of disputed accuracy.
"612. Charges for certain disclosures.
"613. Public record information for employment purposes.
"614. Restrictions on investigative consumer reports.
"615. Requirements on users of consumer reports.
"616. Civil liability for wilful noncompliance.
"617. Civil liability for grossly negligent noncompliance.
"618. Jurisdiction of courts ; limitation of actions.
"619. Obtaining information under false pretenses.
"620. Unauthorized disclosures by officers or employees.
"621. Administrative enforcement.
"622. Relation to State laws.

"601. Short title

"This title may be cited as the Fair Credit Reporting Act.

"602. Findings and purpose

"a) The Congress makes the following findings :

"1) The banking system is dependent upon fair and accurate credit reporting. Inaccurate credit reports directly impair the efficiency of the banking system, and unfair credit reporting methods undermine the public confidence which is essential to the continued functioning of the banking system.

"2) An elaborate mechanism has been developed for investigating and evaluating the credit worthiness ; credit standing, credit capacity, character, and general reputation of consumers.

"3) Consumer reporting agencies have assumed a vital role in assembling and evaluating consumer credit and other information on consumers.

"4) There is a need to ensure that consumer reporting agencies exercise their grave responisiblities with fairness, impartiality, and a respect for the consumer's right to privacy.

"b) It is the purpose of this title to require that consumer reporting agencies adopt reasonable procedures for meeting the needs of commerce for consumer credit, personnel, insurance, and other information in a manner which is fair and equitable to the consumer, with regard to the confidentiality, accuracy, relevancy, and proper utilization of such information in accordance with the requirements of this title.

"603. Definitions and rules and construction

"a) Definitions and rules of construction set forth in this section are applicable for the purposes of this title.

"b) The term 'person' means any individual partnership, corporation, trust, estate, co-operative, association government or governmental subdivision or agency, or other entity.

"c) The term 'consumer' means an individual.

"d) The term 'consumer report' means any written, oral, or other communication of any information by a consumer reporting agency bearing on a consumer's credit worthiness, credit standing, credit capacity, character, general reputation, personal characteristics, or mode of living which is used or expected to be used or collected in whole or in part for the purpose of serving as a factor in establishing the consumer's eligibility for (1) credit or insurance to be used primarily for personal, family, or household purposes, or (2) employment purposes, or (3) other purposes authorized under section 604. The term does not include (A) any report containing information solely as to transactions or experiences between the consumer and the person making the report ; (B) any authorization or approval of a specific extension of credit directly or indirectly by the issuer of a credit card or similar device ; or (C) any report in which a person who has been requested by a third party to make a specific extension of credit directly or indirectly to a consumer conveys his decisions with respect to such request if the third party advises the consumer of the name and address of the person to whom the request was made and such person makes the disclosures to the consumer required under section 615.

"c) The term 'investigative consumer report' means a consumer report or portion thereof in which information on a consumer's character, general reputation, personal characteristics, or mode of living is obtained through personal interviews with neighbours, friends, or associates of the consumer reported on or with others with whom he is acquainted or who may have knowledge concerning any such items of information. However, such information shall not include specific factual information on a consumer's credit record obtained directly from a creditor of the consumer or from a consumer reporting agency when such information was obtained directly from a creditor of the consumer or from the consumer.

"f) The term 'consumer reporting agency' means any person who, for monetary fees, dues, or on a co-operative non-profit basis, regularly engages in whole or in part in the practice of assembling or evaluating consumer credit information or other information on consumers for the purpose of furnishing consumer reports to third parties, and which uses any means or facility of interstate commerce for the purpose of preparing or furnishing consumer reports.

"g) The term 'file', when used in connection with information on any consumer, means all of the information on that consumer recorded and retained by a consumer reporting agency regardless of how the information is stored.

"h) The term 'employment purposes' when used in connection with a consumer report means a report used for the purpose of evaluating a consumer for employment, promotion, reassignment or retention as an employee.

"i) The term 'medical information' means information or records obtained, with the consent of the individual to whom it relates, from licensed physicians or medical practitioners, hospitals, clinics, or other medical or medically related facilities.

"604. Permissible purposes of reports

"A consumer reporting agency may furnish a consumer report under the following circumstances and no other :

"1) In response to the order of a court having jurisdiction to issue such an order.

"2) In accordance with the written instructions of the consumer to whom it relates.

"3) To a person whom it has reason to believe -

"A) intends to use the information in connection with a credit transaction involving the consumer on whom the information is to be furnished and involving the extension of credit to, or review or collection of an account of the consumer ; or

"B) intends to use the information for employment purposes ; or

"C) intends to use the information in connection with the underwriting of insurance involving the consumer ; or

"D) intends to use the information in connection with a determination of the consumer's eligibility for a licence or other benefit granted by a governmental instrumentality required by law to consider an applicant's financial responsibility or status ; or

"E) otherwise has a legitimate business need for the information in connection with a business transaction involving the consumer.

"605. Obsolete information

"a) Except as authorized under subsection (b), no consumer reporting agency may make any consumer report containing any of the following items of information :

"1) Bankruptcies which, from date of adjudication of the most recent bakruptcy, antedate the report by more than fourteen years.

"2) Suits and judgements which, from date to entry antedate the report by more than seven years or until the governing statute of limitations has expired, whichever is the longer period.

"3) Paid tax liens which, from date of payment, antedate the report by more than seven years.

"4) Accounts placed for collection or charged to profit and loss which antedate the report by more than seven years.

"5) Records of arrest, indictment or conviction of crime which, from date of disposition, release or parole antedate the report by more than seven years.

"6) Any other adverse item of information which antedates the report by more than seven years.

"b) The provisions of subsection (a) are not applicable in the case of any consumer credit report to be used in connection with

"1) a credit transaction involving, or which may reasonably be expected tc involve, a principal amount of 50,000 or more ;

"2) the underwriting of life insurance involving, or which may reasonably be expected to involve, a principal amount of 50,000 or more ; or

"3) the employment of any individual at an annual salary which equals, or which may reasonably be expected to equal, 20,000 or more.

"606. Disclosure of investigative consumer reports

"a) A person may not procure or cause to be prepared an investigative consumer report on any consumer unless -

"1) it is clearly and accurately disclosed to the consumer that an investigative consumer report, including information as to his character, general reputation, personal characteristics, and mode of living, whichever are applicable, may be made, and such disclosure (A) is made in a writing mailed, or otherwise delivered to the consumer, not later than three days after the date on which the report was first requested, and (B) includes a statement informing the consumer of his right to request the additional disclosures provided for under subsection (b) of this section ; or

"2) the report is to be used for employment purposes for which the consumer has not specifically applied.

"b) Any person who procures or causes to be prepared an investigative consumer report on any consumer shall, upon written request by the consumer within a reasonable period of time after the receipt by him of the disclosure required by subsection (a) (1), shall make a complete and accurate disclosure of the nature and scope of the investigation requested. This disclosure shall be made in a writing mailed, or otherwise delivered, to the consumer not later than five days after the date on which the request for such disclosure was received from the consumer or such report was first requested, whichever is the later.

"c) No person may be held liable for any violation of subsection (a) or (b) of this section if he shows by a preponderance of the evidence that at the time of the violation he maintained reasonable procedures to assure compliance with subsection (a) or (b).

"607. Compliance procedures

"a) Every consumer reporting agency shall maintain reasonable procedures designed to avoid violation of section 605 and to limit the furnishing of consumer reports to the purposes listed under section 604. These procedures shall require that prospective users of the information identify themselves, certify that the information will be used for no other purpose. Every consumer reporting agency shall make a reasonable effort to verify the identity of a new prospective user and the uses certified by such prospective user prior to furnishing such user a consumer report. No consumer reporting agency may furnish a consumer report to any person if it has reasonable grounds for believing that the consumer report will not be used for a purpose listed in section 604.

"b) Whenever a consumer reporting agency prepares a consumer report it shall follow reasonable procedures to assure maximum possible accuracy of the information concerning the individual about whom the report relates.

"608. Disclosures to governmental agencies.

Notwithstanding the provisions of section 604, a consumer reporting agency may furnish identifying information respecting any consumer, limited to this name, address, former addresses, places of employment, or former places of employment, to a governmental agency.

"609. Disclosures to consumers

"a) Every consumer reporting agency shall, upon request and proper identification of any consumer, clearly and accurately disclose to the consumer :

"1) The nature and substance of all information (except medical information) in its files on the consumer at the time of the request.

"2) The sources of the information except that the sources of information acquired solely for use in preparing an investigative consumer report and actually used for no other purpose need not be disclosed Provided : That in the event an action is brought under this title, such sources shall be available to the plaintiff under appropriate discovery procedures in the court in which the action is brought.

"3) The recipients of any consumer report on the consumer which it has furnished -

"A) for employment purposes within the two-year period preceding the request, and

"B) for any other purpose within the six-month period preceding the request.

"b) The requirements of subsection (a) respecting the disclosure of sources of information and the recipients of consumer reports do not apply to information received or consumer reports furnished prior to the effective date of this title except to the extent that the matter involved is contained in the files of the consumer reporting agency on that date

"610. Conditions of disclosure to consumers

"a) A consumer reporting agency shall make the disclosures required under section 609 during normal business hours and on reasonable notice.

"b) The disclosures required under section 609 shall be made to the consumer -

"1) in person if he appears in person and furnishes proper identification ; or

"2) by telephone if he has made a written request, with proper identification, for telephone disclosure and the toll charge, if any, for the telephone call is prepaid by or charged directly to the consumer.

"c) Any consumer reporting agency shall provide trained personnel to explain to the consumer any information furnished to him pursuant to section 609.

"d) The consumer shall be permitted to be accompanied by one other person of his choosing, who shall furnish reasonable identification. A consumer reporting agency may require the consumer to furnish a written statement granting permission to the consumer reporting agency to discuss the consumer's file in such person's presence.

"e) Except as noted in sections 616 and 617, no consumer may bring any action or proceeding in the nature of defamation, invasion of privacy, or negligence with respect to the reporting of information against any consumer, reporting agency, any user of information, or any person who furnishes information to a consumer reporting agency, based on information disclosed pursuant to section 609, 610, or 615, except as to false information furnished with malice or wilful intent to injure such consumer.

"611. Procedure in case of disputed accuracy

"a) If the completeness or accuracy of any item of information contained in his file is disputed by a consumer, and such dispute is directly conveyed to the consumer reporting agency by the consumer, the consumer reporting agency shall within a reasonable period of time reinvestigate and record the current status of that information unless it has reasonable grounds to believe that the dispute by the consumer is frivolous or irrelevant. If after such reinvestigation such information is found to be inaccurate or can no longer be verified, the consumer reporting agency shall promptly delete such information. The presence of contradictory information in the consumer's life does not in and of itself constitute reasonable grounds for believing the dispute is frivolous or irrelevant.

"b) If the reinvestigation does not resolve the dispute, the consumer may file a brief statement setting forth the nature of the dispute. The consumer reporting agency may limit such statements to not more than one hundred words if it provides the consumer with assistance in writing a clear summary of the dispute.

"c) Whenever a statement of a dispute is filed, unless there is reasonable grounds to believe that it is frivolous or irrelevant, the consumer reporting agency shall, in any subsequent consumer report containing the information in question, clearly note that it is disputed by the consumer and provide either the consumer's statement or a clear and accurate codification or summary thereof.

"d) Following any deletion of information which is found to be inaccurate or whose accuracy can no longer be verified or any notation as to disputed information, the consumer reporting agency shall, at the request of the consumer, furnish notification that the item has been deleted or the statement, codification or summary pursuant to subsection

(b) or (c) to any person specifically designated by the consumer who has within two years prior thereto received a consumer report for employment purposes, or within six months prior thereto received a consumer report for any other purpose, which contained the deleted or disputed information. The consumer reporting agency shall clearly and conspicuously disclose to the consumer his rights to make such a request. Such disclosure shall be made at or prior to the time the information is deleted or the consumer's statement regarding the disputed information is received.

"612. Charges for certain disclosures

"A consumer reporting agency shall make all disclosures pursuant to section 609 and furnish all consumer reports pursuant to section 611 (d) without charge to the consumer if, within thirty days after receipt by such consumer of a notification pursuant to section 615 or notification from a debt collection agency affiliated with such consumer reporting agency stating that the consumer's credit rating may be or has been adversely affected the consumer makes a request under sections 609 or 611 (d). Otherwise, the consumer reporting agency may impose a reasonable charge on the consumer for making disclosure to such consumer pursuant to section 609, the charge for which shall be indicated to the consumer prior to making disclosure ; and for furnishing notifications, statements, summaries, or codifications, to persons designated by the consumer pursuant to section 611 (d), the charge for which shall be indicated to the consumer prior to furnishing such information and shall not exceed the charge that the consumer reporting agency would impose on each designated recipient for a consumer report except that no charge may be made for notifying such persons of the deletion of information which is found to be inaccurate or which can no longer be verified.

"613. Public record information for employment purposes

"A consumer reporting agency which furnishes a consumer report for employment purposes and which for that purpose compiles and reports items of information on consumers which are matters of public record and are likely to have an adverse effect upon a consumer's ability to obtain employment shall -

"1) at the time such public record information is reported to the user of such consumer report, notify the consumer of the fact that public record information is being reported by the consumer reporting agency, together with the name and address of the person to whom such information is being reported ; or

"2) maintain strict procedures designed to insure that whenever public record information which is likely to have an adverse effect on a consumer's ability to obtain employment is reported it is complete and up to date. For purposes of this paragraph, items of public record relating to arrests, indictments, convictions, suits, tax liens, and outstanding judgments shall be considered up to date if the current public record status of the item at the time of the report is reported.

"614. Restrictions on investigative consumer reports

"Whenever a consumer reporting agency prepares an investigative consumer report, no adverse information in the consumer report (other than information which is a matter of public record) may be included in a subsequent consumer report unless such adverse information has been verified in the process of making such subsequent consumer report, or the adverse information was received within the three-month period preceding the date the subsequent report is furnished.

"615. Requirements on users of consumer reports

"a) Whenever credit or insurance for personal, family, or household purposes, or employment involving a consumer is denied or the charge for such credit on insurance is increased either wholly or partly because of information contained in a consumer report from a consumer reporting agency, the user of the consumer report shall so advise the consumer against whom such adverse action has been taken and supply the name and address of the consumer reporting agency making the report.

"b) Whenever credit for personal family or household purposes involving a consumer is denied or the charge for such credit is increased either wholly or partly because of information obtained from a person other than a consumer reporting agency bearing upon the consumer's credit worthiness, credit standing, credit capacity, character, general reputation, personal characteristics, or mode of living, the user of such information shall within a reasonable period of time , upon the consumer's written request for the reasons for such adverse action received within sixty days after learning of such adverse action disclose the nature of the information to the consumer. The user of such information shall clearly and accurately disclose to the consumer his right to make such written request at the time such adverse action is communicated to the consumer.

"c) No person shall be held liable for any violation of this section if he shows by a preponderance of the evidence that at the time of the alleged violation he maintained reasonable procedures to assure compliance with the provisions subsections (a) and (b).

"616. Civil liability for wilful noncompliance

"Any consumer reporting agency or user of information which wilfully fails to comply with any requirement imposed under this title with respect to any consumer is liable to that consumer in an amount equal to the sum of -

"1) any actual damages sustained by the consumer as a result of the failure ;
"2) such amount of punitive damages as the court may allow, and
"3) in the case of any successful action to enforce any liability under this section, the costs of the action together with reasonable attorney's fees as determined by the court.

"617 Civil liability for grossly negligent noncompliance

"Any consumer reporting agency or user of information which is negligent in failing to comply with any requirement imposed under this title with respect to any consumer is liable to that consumer in an amount equal to the sum of -

"1) any actual damages sustained by the consumer as a result of the failure ;
"2) in the case of any successful action to enforce any liability under this section, the costs of the section together with reasonable attorney's fees as determined by the court.

"618. Jurisdiction of courts limitation of actions

" An action to enforce any liability created under this title may be brought in any appropriate United States district court without regard to the amount in controversy, or in any other court of competent jurisdiction, within two years from the date on which the liability arises, except that where a defendent has materially and wilfully misrepresented any information required under this title to be disclosed to an individual and the information so mis - represented is material to the establishment of the defendent's liability to that individual under this title, the action may be brought at any time within two years after discovery by the individual of the misrepresentation

"619. Obtaining information under false pretenses

"Any person who knowingly and wilfully obtains information on a consumer from a consumer reporting agency under false pretenses shall be fined not more than $ 5, 000 or imprisoned not more than one year, or both.

"620. Unauthorized disclosures by officers or employees

"Any officer or employee of a consumer reporting agency who knowingly and **wilfully** provides information concerning an individual from the agency's files to a person not authorized to receive that information shall be fined not more than $ 5,000 or imprisoned not more than one year, or both.

"621. Administrative enforcement

"a) Compliance with the requirement imposed under this title shall be enforced under the Federal Trade Commission Act by the Federal Trade Commission with respect to consumer reporting agencies, and all other persons subject thereto except to the extent that enforcement of the requirements imposed under this title is specifically committed to some other government agency under subsection (b) hereof. For the purpose of the exercise by the Federal Trade Commission of its functions and powers under the Federal Trade Commission Act, a violation of any requirement or prohibition imposed under this title shall constitute an unfair or deceptive act or practice in commerce in violation of section 5 (a) of the Federal Trade Commission Act and shall be subject to enforcement by the Federal Trade Commission under section 5 (b) thereof with respect to any consumer reporting agency or person subject to enforcement by the Federal Trade Commission pursuant to this subsection, irrespective of whether that person is engaged in commerce or meets any other jurisdictional tests in the Federal Trade Commission Act. The Federal Trade Commission shall have such procedural, investigative, and enforcement powers, including the power to issue procedural rules in enforcing compliance with the requirements imposed under this title and to require the filing of reports, the production of documents, and the appearance of witnesses as though the applicable terms and conditions of the Federal Trade Commission Act were part of this title. Any person violating any of the provisions of this title shall be subject to the penalties and entitled to the privileges and immunities provided in the Federal Trade Commission Act as though the applicable terms and provisions thereof were part of this title.

"b) Compliance with the requirements imposed under this title with respect to consumer reporting agencies and persons who use consumer reports from such agencies shall be enforced under -

"1) section 8 of the Federal Deposit Insurance Act, in the case of :

"A) national banks, by the Comptroller of the Currency ;
"B) member banks of the Federal Reserve System (other than national banks), by the Federal Reserve Board ; and
"C) banks insured by the Federal Deposit Insurance Corporation (other than members of the Federal Reserve System), by the Board of Directors of the Federal Deposit Insurance Corporation.
"2) section 5 (d) of the Home Owners Loan Act of 1933, section 107 of the National Housing Act and sections 6 (i) and 17 of the Federal Home Loan Bank Act, by the Federal Home Loan Bank Board (acting directly or through the Federal Savings and Loan Insurance Corporation), in the case of any institution subject to any of those provisions ;
"3) the Federal Credit Union Act, by the Administrator of the National Credit Union Administration with respect to any Federal credit union ;
"4) the Acts to regulate commerce, by the Interstate Commerce Commission with respect to any common carrier subject to those Acts ;
"5) the Federal Aviation Act of 1958, by the Civil Aeronautics Board with respect to any air carrier or foreign air carrier subject to that Act ; and
"6) the Packers and Stockyards Act, 1921 (except as provided in section 106 of that Act), by the Secretary of Agriculture with respect to any activities subject to that Act.

"c) For the purpose of the exercise by any agency referred to in subsection (b) of its powers under any Act referred to in that subsection, a violation of any requirement imposed under this title shall be deemed to be a violation of a requirement imposed under that Act. In addition to its powers under any provision of law specifically referred to in subsection (b), each of the agencies referred to in the subsection may exercise for the purpose of enforcing compliance with any requirement imposed under this title any other authority conferred on it by law.

"622. Relation to State laws

"This title does not annul, alter, affect, or exempt any person subject to the provisions of this title from complying with the laws of any State with respect to the collection, distribution or use of any information on consumers, except to the extent that those laws are inconsistent with any provision of this title, and then only to the extent of the inconsistency".

EFFECTIVE DATE

Sec. 602. Section 504 of the Consumer Credit Protection Act is amended by adding at the end thereof the following new subsection :

> "d) Title VI takes effect upon the expiration of one hundred and eighty days following the date of its enactment".

Annex II

NATIONAL INFORMATION SYSTEM IN JAPAN

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1. NATIONAL INFORMATION SYSTEM

We conceive a national information system, or "NIS", as a total one in which information systems at individual enterprises and government agencies are organically interrelated rather than confined to their respective bounds of activity. In our sense, therefore, a NIS does not signify a "governmental" information system, although the term "national" may impart that impression. Much of it will consist of systems developed and maintained by private firms. In addition, it will include various systems operating between government agencies, and between private firms and government agencies.

From the viewpoint of an individual information processing system, a NIS may be considered a network that systematically takes in outside information and puts out inside information. Such information flows through communication channels, or by means of documents, drawings, tapes, disks, and such other physically transported means of recording. A NIS may involve both on-line and off-line networks.

A NIS will begin as a group of local systems developed between parent firms and their subsidiairies, between manufacturers and their distributors, and between government agencies closely related to each other in some specific areas of activity. Such systems will gradually grow in scope, develop complex ties with one another, and eventually merge into a vast network encompassing the entire society.

With recent progress in industrial development, economic internationalism, and social urbanisation, the environment for the activities of government agencies and private enterprises is changing very fast. To grasp such changes accurately and quickly, private firms are bent on developing management information systems, or MIS's, while government agencies are endeavouring to build up administrative information systems, or AIS's.

In modern society, such management and administrative information systems will be maintained successfully only on the basis of a national information system providing organic connections between inside and outside information sources at private enterprises and government agencies. In other words establishment of NIS is essential for effective operation of MIS's and AIS's ; and adequate development of MIS's and AIS's in turn is essential for a well-established NIS. They are dependent on each other, and can grow only hand in hand.

In the following brief discussion, we shall focus on AIS's which will have much weight as components of a NIS and consider the way they should be, where they stand how and how they are likely to develop in the future. In addition, the AIS of our Ministry of International Trade and Industry will be outlined as a typical administrative information system.

2. ADMINISTRATIVE INFORMATION SYSTEMS (AIS'S)

2.1 Need for AIS's

Today, economic and social circumstances are undergoing remarkable changes, and administrative agencies need to grasp these changes accurately if the nation is to achieve the goals set for it in the new era now beginning. The administration is now most urgently required to meet the following needs :

i) rationalisation of administrative procedures ;
ii) improvements in their services, specifically -

- simpler and speedier licensing, approval granting, and inquiry services ; and
- improved information supply and control functions to ensure ecological and social conditions ;

iii) more sophisticated administrative activities, specifically -

- better-planned programmes based on more abundant information ; and
- more effective execution and control of policy based on more reliable information.

These needs must be met simultaneously. The Administration, therefore, must switch its thinking from the conventional principle of treating the programme of each agency as an independent, closed unit to a new multiple policy of synchronising many programmes. Such organic, purposeful thinking becomes possible only with a more sophisticated way of information processing and systems engineering, which makes optimisation of individual administrative programmes compatible with that of a multiple administrative programme.

2.2 Information Processing Functions of AIS's

Thus, we need to develop administrative procedures for new objectives. For this purpose we must first switch from the conventional way of thinking in favour of vertical or "pyramidal" organisation to a more functional "network" organisation principle emphasising the information flow, and to more sophisticated information processing functions in support of the new principle.

Salient features of this development include the following :

i) a change over from the concept of the "mechanist" view of administration to the idea of "systematisation". Systematisation of administration requires abundant, accurate information, which must be collective and dynamic rather than individual and static as in the past. It should include systematic as well as local, elementary information. From this viewpoint, we need data bank functions (information exchange networks, etc.) and information processing functions adaptable to advanced data utilisation techniques.

ii) A change over from authoritarian administration to functional. This change over means one from "control" administration to "guidance" administration based on systematic, intelligent activities. For this purpose, we need information in support of advanced thinking that can also provide basic material for administration. Such information must be objective and purpose-oriented rather than subjective and rule-bound. We also should have control information as well as administrative. For this purpose we need high-density data bank functions, and information processing functions (as represented by time sharing systems) involving information analysis techniques contributed to more extensive thinking.

iii) A change over from the "hard" type of organisation to the "soft" type. For this change over, we require information adaptable to fast-changing administrative needs. Such information can be obtained by quickly reorganising routine information. We also need information primarily designed to stimulate action rather than merely to be understood. From this point of view, information exchange networks should be made on-line. There should also be information processing functions guaranteeing simultaneity and locality, such as time sharing and remote batch systems.

iv) A change over from the "tree" type of organisation to the "network" type. This change over requires uniformity in multipurpose administration. For this purpose, we need information processing functions for increasing the organic character of information (such as functions for standardising and evaluating information).

Although these features have been described separately to accentuate the characteristics of each, they are not independent of one another but mutually complementary.

Some functions are commonly required in all cases, such as the data bank functions (information exchange networks, etc.) and on-line functions (time sharing or remote batch systems, etc.). Generally, we need information-processing systems capable of processing information organically in real time.

2. 3 Data-bank functions of AIS's

Data bank functions are essential if we are to have adequate information for the above-mentioned change-over in organisational principle. In developing such functions, we should bear the following considerations in mind :

An ideal data bank is one from which anyone can obtain desired information from anywhere at any time. It should also enable anyone, whether inside or outside the system, to participate easily. In other words, it should be free of undue restrictions in selection and distribution of information.

The current data bases of information systems at government agencies, with a few exceptions, have been built up through the performance of their respective services (statistical research licensing, approval granting, insurance, taxation, etc.).

Data emerging from such specific services and usable as social indicators should be made available as common property to all government agencies for administrative purposes and also to private sectors as service from the Government.

A data base concerning a specific administrative service is designed and operated on the basis of optimum conditions for that particular purpose, and will serve as an extremely high-density data bank in the specific area of activity.

Thus data banks will naturally tend to be more and more differentiated and specialised as they become higher in density.

Such specialised data banks, utilised in an information exchange network, should facilitate total operations in various uses of information.

If specific service systems are designed with enough "openess" to be included in a wider network, and if interfaces between data bases are standardised, development of data banks will involve few technical difficulties with respect to hardware or software. This approach is also preferable from the financial point of view.

Today we are accustomed to one-way communication systems, such as mass media, and mainly vertical information flow systems. Information files arranged in such a "tree" system, or a "pyramidal" structure, may be efficient under certain specific conditions, but will severely limit the freedom of participation and choice which an ideal data bank should provide. For another thing, adoption of computers can have the benefit of scale only in massive, routine services. In such cases, the "tree" type of organisation is more efficient for data gathering and communication. On the other hand, the benefit of scale can hardly be expected in the communication of information necessary for "planning" functions as mentioned previously, namely that of promoting intelligent activities through different combinations of abundant data. Since information can be processed without regard to differences in time and space, it need not be physically concentrated or generalised as materials usually must.

Data banks can be organised by developing data bases for specific services and a network for interconnecting the data bases.

2.4 Fallout for Private Sectors

Finally, let us consider how government efforts in computer utilisation and popularisation benefit private sectors. Important among such effects are the following :

a) effects of direct incentives : industrial policies, communications programmes, newly-established or revised systems for promoting computer usage ;
b) quantitative and qualitative improvements in administrative services directly bearing on national life : simpler and speedier service procedures for individual citizens ;
c) benefits from the systematisation of procedures achieved in the course of planning and implementing administrative

policies. In the shape of a spread of public-property information service and technical developments, such benefits help interested industries and other users who carry out information programmes.

Item (a) requires action on the part of the policy planner, whereas items (b) and (c) call for attention on the part of the user. Competent government agencies should endeavour to take the lead in this area of activity from their respective viewpoints.

Individual proposals for items (a) and (b) may vary somewhat in importance and priority, but all are apparently based on an established general policy for future progress. Item (c), on the other hand, seems to be understood today only as an abstract idea. A change-over in organisational principle is creating new demands for information, giving rise to networks for communicating information, and spreading and expanding data bank functions and utilisation techniques. All these developments point to openess and flexibility in government information systems. However, on the part of private users, who are to participate in such systems as partners and as recipients of technical benefits to be exchanged or extended, there seem to be no demands expressed in practical terms, with a few specific exceptions. The user community as a whole is hardly responsive to approaches from the Government. However, government agencies should refrain from forcing ideas of their own on private circles.

The Government should not fall back on its own abstract view to lead private circles, but should consider first of all whether or not there are, or will be, private needs for information from government systems. If there are, or will be, such needs, the Government should formulate them into practical goals for system design. On the basis of such research the Government should establish guidelines for the development of a national information system or NIS.

3. AIS'S TODAY

3.1 Computer Installations and Computerised Services at Government Agencies

In fiscal year 1970, computer installations at Japanese government agencies numbered 170, on which $ 23 million was paid in rentals. An estimated 3,247 government employees were engaged in computer operations, including 749 systems engineers and senior programmers. Now, how is all this computer power utilised - or going to be utilised ? With a few favourable exceptions, computers at government agencies are evaluated variously by different people. In the past, they have tended to be evaluated in the light of how much they contribute to the rationalisation of mainly massive, routine services, or how much labour they save.

But the usefulness of computers in administrative services should not be judged from this viewpoint alone.

Of the 170 computers, 39.3 per cent are used in statistical computing services, 35.6 per cent in clerical control services, 10.6 per cent in analysis and forecasting services, and 14.5 per cent in laboratory research services.

The routine services of statistical computing and clerical control still claim 74.9 per cent of the governmental computer installations. It is noteworhty, however, that the shares of the nonroutine services add up to more than a quarter, or 25.1 per cent.

COMPUTER SYSTEMS AT GOVERNMENT AGENCIES, BY TYPE OF SERVICE

Classification		N° of systems
Statistical computing services (95 systems)	Statistics	56
	Payroll	24
	Statistical analysis	15
Routine control services (85 systems)	Personnel	8
	Budget and accounting	5
Routine control services (86 systems)	Production, sales, inventory	23
	Transportation, communication	6
Routine control services (86 systems)	Patent, license and other registration control	4
	Public information	9
	Taxation, insurance	17
	Information retrieval	9
	Others	5
Analysis and forecasting services (24 systems)	Information analysis	10
	Economic analysis	5
	Systems analysis	2
	Demand forecasting	3
	Others	4
Laboratory research services (35 systems)	Scientific and technological	32
	Others	3

Specifically, computer users at Japanese government agencies have initially been computerising massive, routine services (statistical computation, employment agency service, social insurance, taxation, etc.), and on the basis of experience thus acquired, they a are now beginning to use computers in making administrative decisions (planning systems).

In Japan there is a spontaneous inclination to build up planning systems by incorporating in the data bases developed through the operation of specific service information systems.

This process seems to represent the most reasonable approach both technically and financially for establishing planning systems which is the final goal of government agencies in using computers.

3. 2 Information Flows among Government Agencies

Currently there are fifty-four cases of data swap among AIS's - mostly involving off-line exchanges of magnetic tape. Such flows of data often take place in monthly and yearly cycles. The number of items of data exchanged per monthly cycle is about 1,276,000 and that per yearly cycle, 700,000. The figure for weekly and shorter cycles is 2,718,000.

Such data exchanged largely concern automobile registration drivers' licence list, and similar services. Recently, however, data for use in making policy decisions, such as production indices and price indices, are beginning to be exchanged.

3. 3 Efforts for developing a NIS

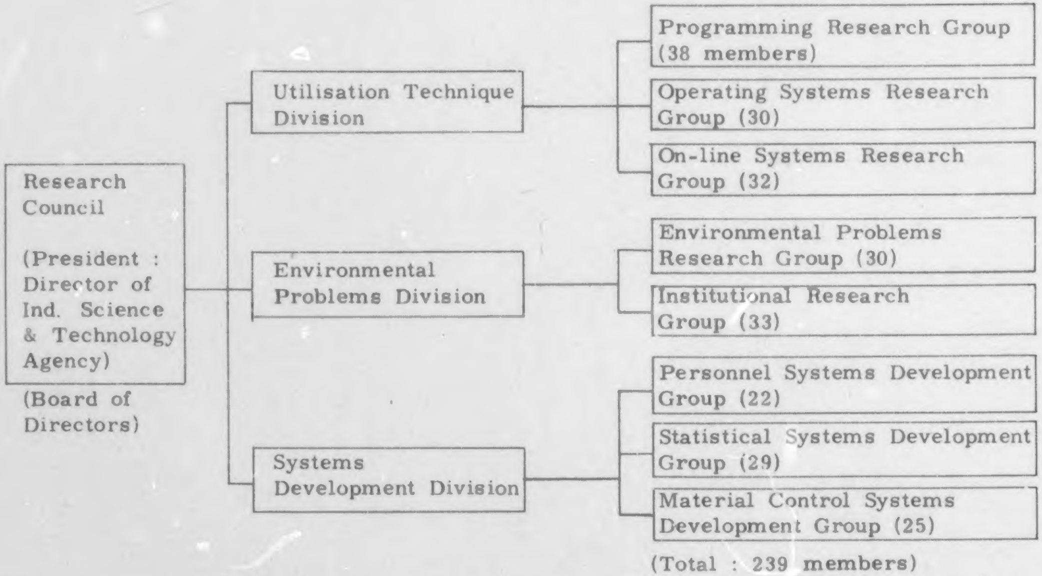
Efforts for AIS development by government agencies fall into two major categories. One covers the development of specific service information systems and planning under the control of individual government agencies. The other includes research and development efforts by a "Technical Research Council on Computer Utilisation" organised in the Industrial Science and Technology Agency.

This group is noteworthy in that it views AIS's as components of a NIS. A brief description of the council would be in order at this point. The group originated as a private association of technical personnel of government agencies relatively advanced in the development of AIS's, which had been in progress since around 1961.

At that time, there were only a few AIS experts in any single ministry or comparable major agency. Since their number was not large enough to support effective discussion on systems design within each agency, they spontaneously formed an inter-ministerial group to exchange information and experience in computer utilisation. Recently, it has been increasingly important to consider interdisciplinary problems, and for this purpose it has become necessary to promote technical exchanges between experts of different government agencies as well as contacts between related areas of activity. To meet these needs, the Industrial Science and Technology Agency formally launched the Research Council in June 1968.

At present, 349 technical experts from 17 ministries and major agencies are participating in the organisation, which is operating through its three divisions and eight research groups.

ORGANISATION OF TECHNICAL RESEARCH COUNCIL ON COMPUTER UTILISATION


Research Council
(President : Director of Ind. Science & Technology Agency)
(Board of Directors)
Utilisation Technique Division
Environmental Problems Division
Systems Development Division
Programming Research Group (38 members)
Operating Systems Research Group (30)
On-line Systems Research Group (32)
Environmental Problems Research Group (30)
Institutional Research Group (33)
Personnel Systems Development Group (22)
Statistical Systems Development Group (29)
Material Control Systems Development Group (25)
(Total : 239 members)

Note : The council's activities include the following :

1) Exchange and spread of utilisation technique.
2) Development of advanced utilisation technique.
3) Improvement of compatibility through standardisation.
4) Promotion of responsiveness to technical progress.
5) Elimination of redundancy in the development of utilisation technique.

With a $ 90,000 budget for fiscal year 1971, the council is working on a total of 26 themes. Between 1968 and 1970, it published 23 research reports. From 1971 onward, the council expects to maintain and spread its technical developments, and step up its advisory activities concerning the AIS's of various government agencies.

Table I

RESEARCH ACTIVITIES

	Fiscal Year			
	1968	1969	1970	1971 and thereafter
Input-output on-line systems				
OCR's and OMR's	→			
Problems concerning input-output equipment		—	→	
Standardisation of keyboard arrangements		→		
Standardisation of transmission code		→		
Input data check systems		—	→	
Terminal equipment		—	—	→
Communication sppeds and modes			→	
Methods of evaluating performance of input-output systems			→	
Transmission control modes and error control modes			—	→
Standard exchange systems	—	—	—	→
Standardisation of input-output systems				→
Trends in utilisation of on-line systems	—	—	→	
Network systems	—	—	—	→
Files and programming				
Trends in file programme systems at government agencies	—	→		
Random access files		→		
Compiler techniques		—	→	
Information retrieval systems		—	—	→
Filing and retrieval techniques		—	—	→
General-purpose data-processing programmes				→

→

Table I (continued)

	1968	1969	1970	1971
Operating systems (OS)				
Establishment of OS concept	→	→		
Possibilities of OS standardisation		→	→	
OS evaluation			→	→
OS in general and specialised uses				→
Other problems on OS	→	→	→	→
Documentation				
Computer time control sheets and cards	→			
Programme specification (including operation sheets)				
Recording media control and other means of data security		→		
Service request, punching request, and other such forms			→	→
Other problems on documentation			→	→ →
Standardisation				
Prefectural codes	→			
Character codes		→	→	→
Other data codes				
Standardisation of I-O interfaces			→	→ →
Institutions				
Rental arrangements		→		
Personnel, organisation, and other aspects of computer room management			→	→
Validity of recording media as evidence or proof			→	→
Environmental Problems				
NIS	→	→		
IR's and OR's				
Networks and data banks		→	→	→
Systems engineering			→	→
Organisational problems			→	→
Other problems concerning effective utilisation of computers		 →	→ →	→ →

Table II

RESEARCH REPORTS PUBLISHED

Title	Contents
List of Magnetic Tape Files at Government Agencies.	Describing the types and data items of the magnetic tape files maintained at eleven agencies participating in a file research group, this list is intended to facilitate exchanges of files among various agencies.
List of Operating Programs at Government agencies	Describing the data items of 500 operating programs held by 15 agencies participating in an operating program research group, as well as the types of equipment the programs are used with and the outlines of the programs ; the list is intended to facilitate mutual utilisation of programs among government agencies and prevent redundancy in program development.
Standardisation of Prefectural Codes	This report surveys the prefectural codes currently used by various government agencies and, on the basis of the findings in this survey, proposes a standard code. The draft code was reflected in JIS (Japanese Industrial Standards) specifications established in April 1970.
Survey on Computer Control Systems Used at Government Agencies and Summary of its Findings	This report surveys computer control sheets and cards (planning sheets, operating record sheets, accident report forms, etc.) used at government agencies, and proposes standard sheet and card preparation procedures.
Efforts Toward NIS	This report makes a "system analysis" of information systems and considers how a national information system (NIS) should be. It proposes a "network" form of NIS.

⟶

Table II (continued)

Title	Contents
Information Processing Systems for More Advanced Administration and Their Network Organisation.	Applying the concept of NIS to the Administration, the report concludes that administrative information systems (AIS's) should be organised into a network having a switching centre with a clearing function.
Ideas for On-line Systems at Government Agencies	From the viewpoint described above, the report discusses how on-line systems at government agencies should be, and technically considers the desired composition and functions of such a system.
OCR's and OMR's	Dealing with OCR's and OMR's, which are expected to play a central role among input devices, the report summarises the council's findings from information supplied by their manufacturers about their latest developments. It will provide a useful guide for government agencies desiring to adopt OCR and OMR devices.
Auxiliary Memories and Information Retrieval Methods	With increasing sophistication in computer utilisation, more and more importance is being attached to random-access files. The report summarises latest developments and future trends in this field, as well as how files should be made up and what information retrieval methods should be used for them. It also discusses the microfilming system, which has recently become important.

→

Table II (continued)

Title	Contents
Standardisation of On-line Systems (for the realisation of AIS's)	The report discusses trends in the standardisation of transmission codes and keyboard arrangements, which is essential for a future network of administrative information systems. It also gives a prospective view of terminal equipment.
Standardisation of Program Specifications	Efficient operation of a computer requires various sheets, including those for program specifications. The report summarises their uses, utilisation range, definition, and forms with a view to providing a basis for standardisation at government agencies.
Operating Systems Today (Known as "OS's", operating systems are basic computer operating programs supplied by computer manufacturers)	Various design ideas for operating systems, their functions, software systems, and such other subjects are discussed and summarised in relation to latest developments. The report also touches, wherever necessary on the values of operating systems and the problems they involve.
Problems involved in Input-Output Systems at Government Agencies	In operating a computer, input-output systems are of great importance as they are the means of contact between man and machine. The report, therefore, discusses and summarises data check systems and input-output devices currently used at government agencies and the problems involved in them.

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Table II (continued)

Title	Contents
Fiscal year 1969 Report of the Environmental Problems Research Group	Using typical administrative projects at government agencies as examples, the report summarises techniques and problems common to all agencies. With respect to problems on data, it discusses various problems in detail from the viewpoints of both demand and supply.

Table III
DEVELOPMENT ACTIVITIES

Development Theme	Description	Fiscal Year			
		1969	1970	1971	1972 and thereafter
Personnel information processing					
Payroll subsystem	Computerising payroll calculations for government employees, and developing a system for providing pay specifications and other pay sheets and cards as output.	→			
Personal data preparation subsystem	Developing a system in which the personal histories of employees as well as other data about them are filed on magnetic tape so that they can be utilised most effectively in personnel recruiting and planning, and which permits provision of personnel statistics and other personnel management information in sheets and cards as output.		→		
Personnel recruiting subsystem	Developing a system which enables one to find from a file as described above candidates meeting certain requirements, thus helping in personnel management.			→	
Personnel planning subsystem	Developing a system for personnel planning which enables one to determine optimum personnel assignments, or to simulate future personnel compositions when establishing immediate recruiting plans.				→
Material control					
Material control data preparation subsystem	Developing a system which enables the computer to accept material data as input, filing them in magnetic tape, and to provide material control records, material supply records, and such other material information in sheets and cards as output. The system should also permit scanning of a material file.		→	→	

→

Table III (continued)

Development Theme	Description	Fiscal Year			
		1969	1970	1971	1972 and thereafter
Material planning subsystem	Developing a system which , when using data from a file as described above, enables one to work out material procurement, distribution, and inventory plans.				→
Document Control					
Document control data preparation subsystem	Developing a system which enables one to file clerical documents, official documents, etc., and to prepare control data and statistics .				→
Document information retrieval subsystem	Developing a system which, when using a file as described above enables one to retrieve specific items of data pertinent to specific chronological periods.				→
Scheduling					
Computer scheduling system	Developing a system which enables one to determine most efficient allotments of computer time when various service operations are to be handled by various computers.				→
Statistical information processing					
Statistical computation intermediate language	Developing a language best suited for statistical computation (COST).	→			
Statistical analysis subsystem	Developing and compiling programs for analysing and processing statistical information, making them into packages ; at the same time, developing a system which enables one to use such programs in different combinations to analyse and process such statistical data easily for various purposes.		→		

4. TYPICAL SYSTEM

As a typical case in which systems design is now in progress on the basis of the NIS and AIS concepts described in Sections 1 to 3, it would be appropriate to mention the information control system of our Ministry of International Trade & Industry (MITI).

As shown in Fig. 1, the system consists of a central information processor and five components surrounding it. They are designed to operate in an organic relationship with one another.

The development of this system began with that of operating systems (1) for MITI's specific services. (For the description of each of these operating systems and its development schedule, refer to Fig. 2).

Later, for effective utilisation of the data bases created by these operating systems, data bank systems (2) were organised. (For the types and quantitites of data handled, refer to Fig. 3).

Furthermore, in order to obtain outside data required for the establishment of these data bank systems, network systems (3) for exchange of information with other government agencies and private institutions are now being organised. (For the type of data handled, partners participating in the network, and the network development schedule, refer to Fig. 4).

On the basis of the above three functions we are performing data retrieval, simulation, and other operations necessary for administrative decisions.

Thus, we are building up a solid basis on which we can utilise our information processing facilities for policy decisions, and we are now ready to start developing planning systems (4) for various planning projects. (For a list of such projects, refer to Fig. 5).

Needless to say, the various planning systems listed up there are high-density information systems in their respective specialised fields, and each of them is a complete entity as a local system.

The total system is in the form of a network based on these specialised systems. In internal structure, it is not a single, vast, concentrated system.

Control systems (5) are beginning to be launched with some tests concerning personnel management. Their development will proceed gradually in accordance with necessary amendments of pertinent laws and regulations. (For the types of control systems and their development schedule, refer to Fig. 6).

We have seen an outline of current and prospective AIS's at our Ministry of International Trade & Industry.

Figure 1

MITI ADMINISTRATIVE INFORMATION SYSTEM (MAIS)

(Total sytem)

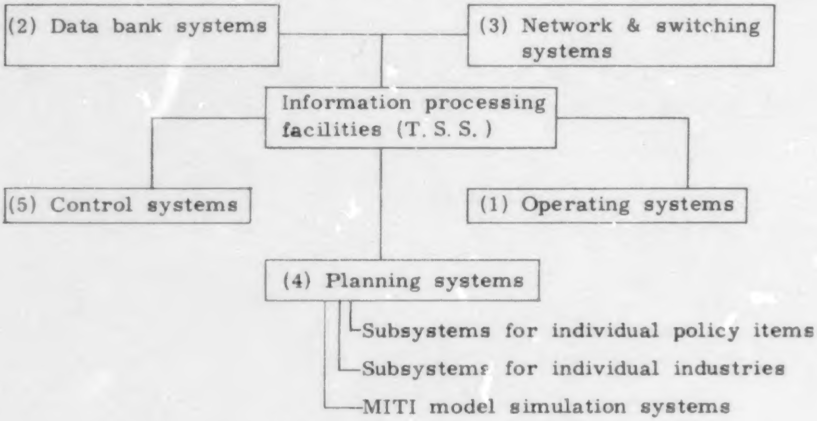
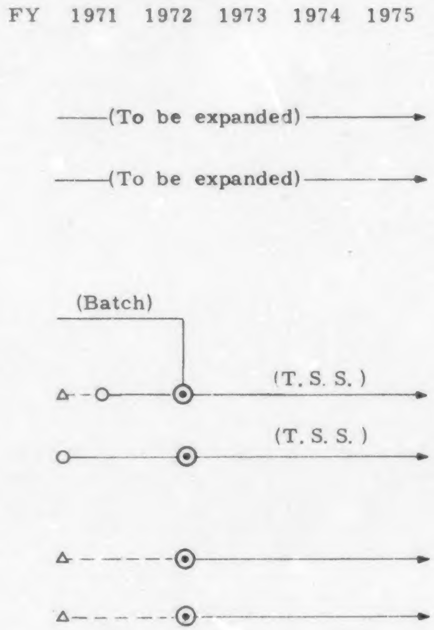

(2) Data bank systems
(3) Network & switching systems
Information processing facilities (T. S. S.)
(5) Control systems
(1) Operating systems
(4) Planning systems
Subsystems for individual policy items
Subsystems for individual industries
MITI model simulation systems

Figure 2

OPERATING SYSTEM PLANS



Insurance service operating systems

Export Insurance service operating system

Machinary insurance service operating system

Patent service operating systems

Application service operating system

New overal service operating system

Patent information retrieval system

Import-export service operating systems

Import licensing service operating system

Export licensing service operating system

Current operations	Projected operations
Mechanization of common insurance, deferred export payment, export bill, investment insurance services ; import-export firm information retrieval	Improvement of OMR's, expansion of terminal devices, on-the-spot operations at local bureaux through on-line systems establishment of insurance information retrieval systems.
Control of patent application business flow	Toward new T. S. S. system (under consideration)
Information retrieval system for examination of applications in some categories	Establishment of T. S. S. retrieval system for various information for patent examination.
Mainly, preparation of import license statistics	Systematization of service operations through effective use of OMR's Systematization of service operations through business co-ordination between Ministry and foreign-exchange banks.
Systematization research in progress	

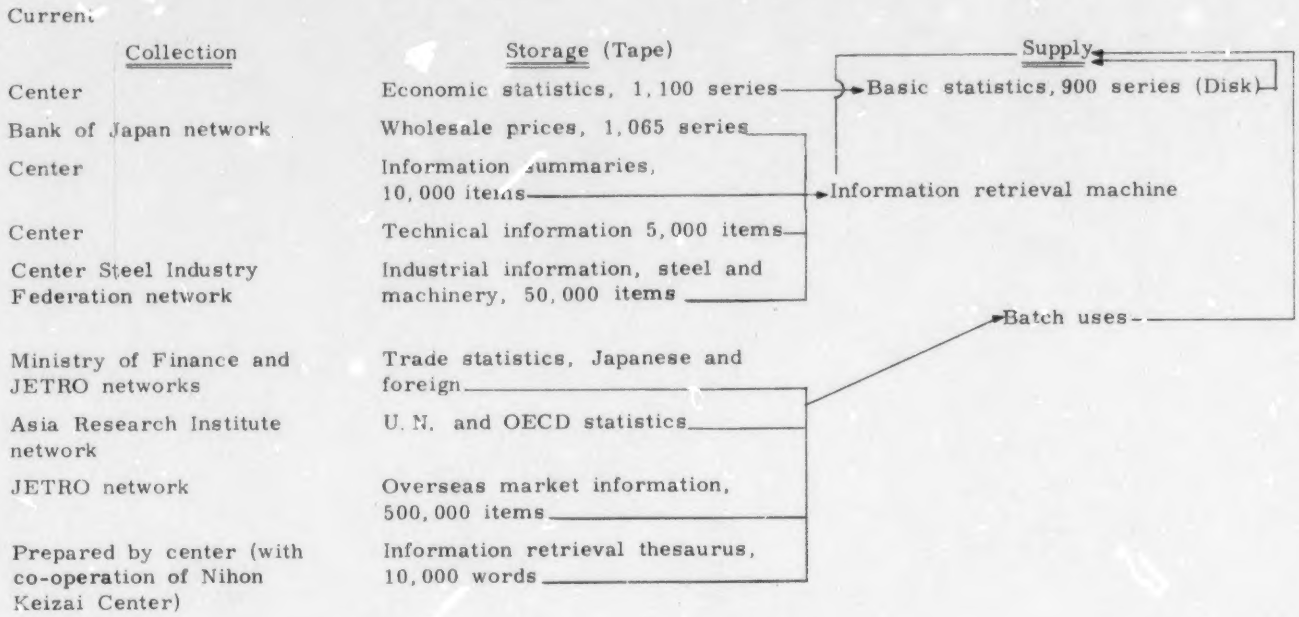
Figure 2 (continued)

	71 72 73 74 75		
Invisible, trade licensing service operating system	△---○—⊙———→	Research in progress	Systematization of licensing service
Export inspection service operating system	—⊙—(to be expanded)——→	Preparation of inspection records (industrial inspection records)	Systematization of inspection service
Statistical service operating systems			
Industrial statistics and other census statistics	—(to be continued)——→	Mechanical processing of industrial and commercial statistics	
Mining and manufacturing production behavior statistics	△--○(to be expanded)——→	Mechanization of oil demand and supply statistics, etc.	
Preparation of mining and manufacturing production indices	—(to be expanded)——→		
Trade behavior statistics	—(to be continued)——→		
Standard Division service systems	△---○—⊙———→	Mark sheet design systems being developed	Establishment of various information retrieval systems through accumulation of JIS information, and their expansion to local bureaux. Rationalization of application service through accumulation of concession maps, and its expansion to other MITI bureaux.
Mining right application service operating systems	△---○—⊙———→	Sendai MITI Bureau system being developed	

△ System development launched.
○ System partly in trial operation.
⊙ System in operation.

Figure 3

EXPANSION OF DATA BANK FACILITIES


Current
Collection
Storage (Tape)
Supply
Center
Economic statistics, 1,100 series
Basic statistics, 900 series (Disk)
Bank of Japan network
Wholesale prices, 1,065 series
Center
Information summaries, 10,000 items
Information retrieval machine
Center
Technical information 5,000 items
Center Steel Industry Federation network
Industrial information, steel and machinery, 50,000 items
Batch uses
Ministry of Finance and JETRO networks
Trade statistics, Japanese and foreign
Asia Research Institute network
U.N. and OECD statistics
JETRO network
Overseas market information, 500,000 items
Prepared by center (with co-operation of Nihon Keizai Center)
Information retrieval thesaurus, 10,000 words

FUTURE DATA BANKS BASED ON TSS

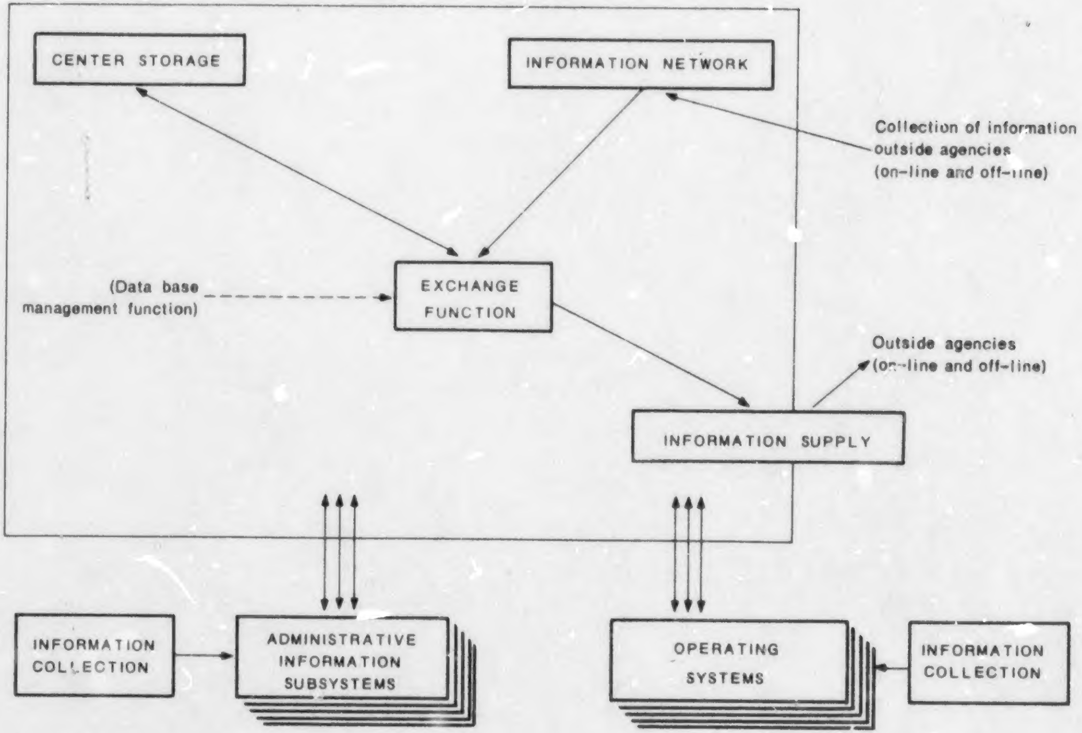

CENTER STORAGE
INFORMATION NETWORK
Collection of information outside agencies (on-line and off-line)
(Data base management function)
EXCHANGE FUNCTION
Outside agencies (on-line and off-line)
INFORMATION SUPPLY
INFORMATION COLLECTION
ADMINISTRATIVE INFORMATION SUBSYSTEMS
OPERATING SYSTEMS
INFORMATION COLLECTION

Figure 4

DEVELOPMENT OF INFORMATION EXCHANGE NETWORK

	Up to 1970 (partners already active)	1971 (including partners now being approached)	1972-1975 (prospective and probable partners)
1) Other ministries and major agencies		Ministry of Finance (customs clearance statistics)	Statistics Bureau, Prime Minister's Office (statistic data bank, small-area data) Economic Planning Agency (income statistics, business trends, etc.) Ministry of Agriculture & Forestry (MAF statistics) Ministry of Labor (wages) Ministry of Health & Welfare (population, welfare, etc.) Ministry of Transportation Science & Technology Agency Ministry of Construction
2) Government-sponsored organizations	JETRO (trade information, 800,000 items ; trade statistics on 80 countries) Asia Economic Research Institute (U.N. statistics, OECD statistics, LDC statistics)	Bank of Japan (commodity prices, financing)	Medium & Small Business Promotion Corporation (business) Gold Prospecting Promotion Corporation Chambers of Commerce & Industry Local public organizations Machine Industry Promotion Association Japan Productivity Center, universities, research institutes
3) Private institutions		Long-Term Credit Bank (financial statements of 2,000 firms) Japan Industrial Bank (plant, financing) Japan Development Bank (investments, etc.) Steel Industry Federation (steel) Nihon Keizai Center (economic news reports)	Japan Export-Import Bank (overseas investments, financing) Industry associations (Plastics Association, Oil Federation, Petrochemical Association, Chemical Fiber Association, Japan Machine Industry Federation, etc.) Scientific & Technological Information Center Many other institutions

Figure 5

FUTURE ORGANIZATION OF PLANNING SYSTEMS

Information subsystems for various planning categories

- △ Trade information system
- ○ International economic information systems
  - Overseas general information system
  - Economic cooperation information system
  - Overseas investment information system
  - Overseas business activity information system, etc.
- ⊙ Foreign-investment policy information system
- ⊙ Technological information system
- ⊙ Ocean development information system
- △ Business information system
  - Business information retrieval system
  - Business information analysis system
- ○ Pollution and safety control information system
- △ Consumer's information system
- ○ Price control information system
- ○ Service industry information system
- ○ Labor control information system
- ○ Housing industry information system
- ○ Energy planning information system
  - Energy supply planning information system
  - Power, gas, oil, coal information systems
- ○ Resources planning information system
- △ Industrial planning information system
- ⊙ Distribution planning information system
- ○ Shipping planning information system
- ○ Medium & small business planning information system
  - Modernization Promotion Law information system
  - Plant modernization financing information system
  - Organization planning information system
  - Subcontractor promotion information system
- △ Investment adjustment information system
- ○ Industrial taxation information system

Information systems on specific industries

Steel, machinery, electronics, chemicals, textiles, general merchandise, mining, metals, etc.

MITI model simulation systems

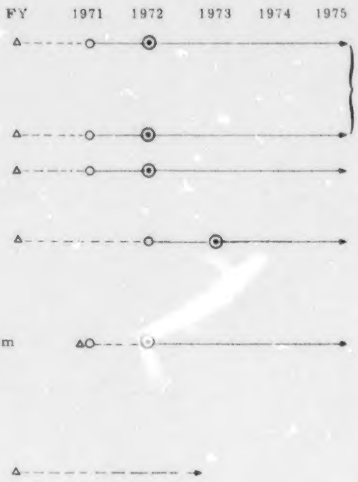
- ○ MITI macro econometric model systems
- △ Econometric model systems for specific industries (already developed on an experimental basis for steel, automobiles, petrochemicals, paper pulp, sheet glass, oil refining, machine tools, and textiles)
- △ Business index models for specific industries (already developed on an experimental basis for steel, power, paper pulp, automobiles, textiles, and machine tools).
- ○ Money flow model
- △ Industrial eco-system
- ⊙ World econometric model system

Notes : Each subsystem will have a data base developed for its specific purpose.

○ Systems already developed or now being developed.
△ Partly launched.
⊙ Being contemplated or conceivable.

Figure 6

CONTROL SYSTEM PLANS



	Current	Prospective
Payroll control system	Payroll business handled by newly-adopted accounting machines.	Payroll calculation and payment system
Mutual-aid control system	Systems already developed by Research Council.	Mutual-aid accounting system
Fiscal control system	System for common use by all ministries is being developed by Ministry of Finance.	Control of accounting operations resulting from budget implementation
Material control system	System being developed by Research Council.	System for controlling materiel sheets and cards and planning materiel procurement. distribution, and storage. Interlocking with accounting control systems
Data & document control system	Establishment of data control center. (EDP information retrieval system will be developed in or after 1972 by Research Council.)	. Central control of important data and documents . Data storage by means of microfilm and and microfiche, and information retrieval system interlocked with computer . System for improving budget compilation in accordance with optimum policy combinations.
PPBS	Research being conducted jointly by all ministries under leadership of Ministry of Finance.	

△ System development launched.

○ System partly in trial operation.

⊙ System in operation.

5. EVALUATION OF NIS AND ITS OUTLOOK

5.1 Outlook of NIS

On the assumption that AIS's are components of a NIS, we have considered how a NIS should be, and where we stand now in its development. Although our present position is still a far cry from the ideal, we are making reasonable progress, advancing slowly but steadily. It may be said that we are emerging from the first phase of computer utilisation, or that of computerising massive, routine services, and entering the second phase, or that of using computers for more sophisticated policy decisions. It is evident that such advanced utilisation of computers, coupled with an increasing need for systematisation of administrative services, will result in a great leap forward.

Within the framework of individual AIS's, we are already se-seriously considering, or even partly carrying out proposals for on-line systems, data banks, and time sharing.

If research achievements by the Technical Research Council on Computer Utilisation are increasingly reflected in individual AIS's, we can look forward to further standardisation of control functions, and standardisation of interfaces between data bases. Such forward steps will contribute greatly toward the development of a NIS.

In the past, we in Japan may have been more idealistic than practical. But now more and more computer users are beginning to share our vision and endeavor to realise it. As will be noted in the next subsection, 5.2, many problems are yet to be solved before we can successfully develop a NIS. Nevertheless, we may well consider that no decisive barriers are in prospect as far as our present technical approaches are concerned.

5.2 Problems involved in development of NIS

Some of the problems that must be solved for successful development of a NIS concern "institutions", such as established , systems, practices and customs as well as existing laws and regulations, which must be amended or abolished. Others concern physical resources and means for developing a NIS, such as computers , transmission lines, and personnel. The following discussion will be limited to the latter kinds of problems.

1) Problems concerning systems

i) Data

a) Setting up standards for data accumulation and storage methods.
b) Establishing a data code system and determining standard codes.
c) Preparing conversion tables to ensure compatibility between different sets of standards.

ii) Software
   - a) Developing software necessary for developing a NIS (techniques for file management, information transfer from one computer to another, communication between a computer and its terminals, etc.).
   - b) Determining and developing a main common language.
   - c) Developing programs for conversion between different systems.

2) Problems concerning equipment and transmission lines

With reference to the equipment used, including the CPU, input-output and peripheral equipment.

- a) Making joint research and development efforts on common NIS equipment (large capacity memories, terminals, etc.).
- b) Standardising interfaces between equipment units used.

5.3 Evaluation of NIS

We are now ready to evaluate the NIS. It is difficult to speak of its usefulness in unequivocal, clearcut terms, for it depends on how the nation will deal with this matter. In short, the nation's attitude will determine whether or not a NIS will be a success. If we seek as our national goals to maintain and elevate our creativity and vitality, guarantee each citizen a decent life, and contribute positively to the peace and prosperity of the international society, development of a NIS undoubtedly is greatly concerned with these goals.

Today, it is becoming difficult to expect our national creativity and vitality to be maintained and elevated if we cling to our conventional patterns of behaviour. Our old patterns also seem to be proving inadequate for the successful solution of ecological and other problems which are deteriorating the quality of our national life.

AIS's should be viewed as instruments for solving these problems.

We must point out here, however, that it is over optimistic to expect these problems to solve themselves if we leave the development of a NIS to follow its own course. Efforts to optimize individual AIS's do not necessarily ensure optimization of a national system. The objective can be achieved only when the entire nation becomes aware of the need for a NIS and endeavours to realise it for the betterment of society.

Although systematisation of administrative services opens up great possibilities, seeking it in the wrong way may lead to serious consequences.

Only when we operate our existing systems with vision, on the principle of optimizing them from the viewpoint of society as a whole, can we approach the goal of overall optimization. And only then can we expect to improve the true quality of our national life.

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